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ORIGINAL ARTICLES.

THE EARLY DIAGNOSIS OF TUBERCULOSIS OF THE KIDNEY.[1]

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IN speaking of primary renal tuberculosis I do not, of course, consider the acute invasion of multiple miliary tubercles as it appears in the course of general miliary tuberculosis. What I intend to discuss is the chronic form of tubercular inflammation which primarily affects one kidney alone.

Let me first emphasize the clinical facts which, although still opposed by a few authors, seem to be well established, viz., that this form of tubercular inflammation is always at first unilateral and descends from the one kidney into the bladder (infecting on its way the ureter), and involves in the beginning one side of that organ only; and that considerable time always elapses before the prostate, with the rest of the genital system and the other kidney, becomes affected. In many instances of commencing renal tuberculosis this one organ alone seems to be attacked by the deleterious inroads of the bacillus Kochii, while the lungs, intestinal tract, bones, and joints are absolutely healthy.

Thus it is evident that if we succeed in recognizing and removing the primary local manifestations of a most deadly general disease, it should be considered a triumph of surgical diagnostics and therapy.

With reference to the etiology, the question naturally first presents itself, How does it occur that a solitary tuberculosis develops in one kidney, or, more strictly speaking, in one of the papillæ of the kidney where the primary focus is always found? The answer is, by embolism. Just as we explain the primary tuberculous inflammation, say, of one of the condyles of the femur or of the tibia by assuming an arrest in a terminal branch of the nutrient artery of the respective bone of one or more tubercle bacilli, so the appearance of a primary renal tuberculosis must also be based on that generally admitted pathological fact, namely, that tubercle bacilli are carried with the blood into the different organs. At one time the bacilli enter the right, at another time the left, kidney.

Many may think that in order to have a kidney infected by the entrance of tubercle bacilli a latent tuberculous deposit must exist somewhere in the patient's body; but this is by no means necessary. We all know that every one of us is exposed to the great danger of inhaling—oftener of swallowing—tubercle bacilli. Unluckily this is still a fact, in spite of continuously improved prophylactic and hygienic measures. If the bacilli be swallowed, infection of the intestinal tract does not follow as a necessary consequence. The infecting micro-organism may be absorbed with the chyle and thus enter the general circulation.

Infection by embolism can take place in any part of the body. No doubt it is a rather rare occurrence to have the bacilli carried into one of the kidneys alone, yet it does occur and certainly oftener than has been heretofore accepted by the profession at large. In the majority of cases Koch's bacillus will settle and find a fertile soil in which to grow and multiply—in the kidneys of those individuals only who inherit the tendency to tuberculosis. A healthy organism—by virtue of the vital energy of each cell-body—will successfully oppose the deleterious inroads of the germ, and it is discharged with the natural excretions.

I wish to mention, in passing, the so-called "ascending" tuberculous inflammation as another etiological explanation of tuberculosis of the genito-urinary system. That the prostate and epididymis in rare instances may be primarily invaded by tubercle bacilli which circulate with the blood also must be admitted; but we have not only the right to suspect, nay, since Schuchardt's[1] most interesting observations, we have in our hands proof of the assumption that tubercle bacilli quite frequently enter the urethra with the gonococci, and may thus primarily infect the prostate or epididymis. By a similar route the female bladder also is subject to the same infection. On the other hand, the prostate or epididy-

[1] Read before the Medical Society of the State of New York at its ninetieth annual meeting, January 29, 1896.

[1] *Archiv f. klin. Chirurgie*, Vol. 44, 2; and *Centralbl. f. Chirurgie*, 1892, No. 47.

mis previously attacked by gonorrhœa in one of tuberculous parentage will often be the so-called "*locus minoris resistentiæ*" to tubercle bacilli carried by the blood. It is a matter of fact that gonorrhœa very frequently precedes primary tuberculosis of the prostate or epididymis.

As soon as the tubercle bacillus has gained a foothold in one of the kidneys destruction begins. A tubercle is formed quietly, without local or general manifestations; slowly it undergoes cheesy degeneration and destroys the renal papilla in which it had developed. Up to this time the individual does not feel or exhibit morbid symptoms. Polyuria may occur, but its true significance is seldom recognized early. Finally the cold abscess with its cheesy masses is evacuated into the pelvis of the kidney, and the urine suddenly becomes turbid and mixed with blood. The cheesy masses, passing down the ureter, will produce symptoms of renal colic. If now the physician makes a careful chemical, microscopical, and bacteriological analysis of the urine, the disease *can* be correctly diagnosed at once, but in the majority of cases one is more likely to think of a renal stone as a causative factor than of primary tuberculosis, and very naturally, too, as the trouble generally occurs in patients between the twentieth and fortieth year. Often the urine is very thoroughly examined, but the staining of portions of the sediment for tubercle bacilli is omitted, or the specimens are stained, but the bacilli are not recognized and the correct diagnosis is not reached. The hematuria, which varies in degree, lasts several days and slowly ceases; the pains also decrease in severity; the urine after a while appears clear and macroscopically normal. The attack is now considered over and the patient discharged.

If, at this stage of the disease, cystoscopy is practiced, a picture is sometimes seen which establishes with absolute certainty the diagnosis of primary descending tuberculosis of the urinary system, even if so far no tubercle bacilli have been detected.

As far as I am able to find in literature, the following observation has not yet been described. On viewing the interior of the bladder the cystoscopist perceives an absolutely healthy surface of the vesical mucous membrane and one perfectly normal ureteral opening. The mouth of the other ureter, however, is injected, and a number of circumscribed, clearly defined, inflamed areas of the mucous membrane can be seen between it and the slightly hyperemic trigonum, leaving the interposed tissue unchanged in appearance, and thus one recognizes with marvelous and astonishing clearness the enemy's steps in a hitherto uninvaded field. I could not compare this picture better than to liken it to footprints in the freshly fallen snow. No other disease of bladder or kidney with which I am acquainted presents a similar cystoscopic appearance.[1] Should the microscope fail after repeated observations to confirm a diagnosis made by the cystoscope, it would be well to inoculate a rabbit by injecting some of the sediment into his pleural or peritoneal cavity, or the diagnostic value of Koch's tuberculin might be tried. In a case at Czerny's Clinic, at Heidelberg, the diagnosis was made by this means, tubercle bacilli appearing in the urine only after repeated injections of tuberculin. On account of the injurious effects of these injections upon the general health of the patient, this method is not to be recommended.

It is scarcely possible that the cystoscopic picture described above could result from any other than a tuberculous irritation. Ordinary pus, not carrying specific micro-organisms, which passes the ureter and bladder after perforation, say, of an abscess containing a small renal calculus, cannot leave similar traces. It is not injurious to the epithelial layers of the vesical mucous membrane; and should slowly growing renal tumor rupture into the pelvis of the kidney, simple hematuria would ensue, but no large amount of pus and cheesy deposits would be found.

In many cases, of course, the picture will not be as clear and pathognomonic as described above. I have seen it so far in two cases only. Especially will it be indistinct where, by previous catheterism, sounding, or irrigation, infection has been carried into the bladder—an occurrence which is very frequently met.

In view of this reasoning, the primary use of the cystoscope cannot be too strongly insisted upon.

Up to a short time ago no means of positive diagnosis in such cases was available, but luckily new, ingenious methods of examination and improved cystoscopic instruments brought forward recently have at last fulfilled a dream that for years has occupied the mind of every medical man interested in this class of diseases. I refer to the catheterization of the ureters, which permits of the bloodless, separate collection and analysis of the secretion of each kidney. In the female sex Kelly's excellent, well-known method should be preferred to others, on account of its absolute

[1] In these examinations I place great reliance in Nitze's instrument, and use no other.

asepsis. Here the bladder is filled with air and the catheter introduced into each ureter with the patient in either the knee-chest or recumbent posture. In the male, Casper's new ureter-cystoscope also enables us to insert the tip of a small catheter into the mouth of each ureter under direct guidance of our eyes, and to push it up toward the pelvis of the kidney as far as desired. I have practiced both methods and cannot praise them too highly. Casper's ureter-cystoscope has been in my possession for the last four months, and in three female and five male patients I succeeded easily in catheterizing both ureters and draining off each kidney separately.[1]

One ought to take great care in these cases—besides proceeding aseptically—not to introduce the catheter too far toward or into the pelvis of the kidney, so as to avoid artificial infection of a healthy organ. If the urine of each kidney has been collected, careful analysis of the same will, in many cases, be an invaluable help in establishing a correct diagnosis.

Thus you have seen that at present we have quite a number of reliable means which, if properly applied, enable us to diagnosticate the primary tuberculosis of one kidney, even in its very beginning, in the majority of cases. The great influence of such scientific progress upon our therapeutic procedures is evident. Only extirpation of the diseased kidney will save the patient's life and save him years of more or less severe illness. In view of the sad prognosis of the trouble in question, this operation seems to me to be clearly indicated. To trust in a spontaneous cure of the disease under a general symptomatic *régime* would be by far too hazardous. The possibility of such a spontaneous cure must, of course, be admitted, but it certainly is a very rare exception and so far not upheld by clinical facts.

On the other hand, by extirpation of the kidney, done as soon as possible, the trouble is not palliated, but actually cured. This point cannot be too strongly emphasized.

If patients, and, as I have frequently experienced, the family physician also, will not consent to such a radical treatment at this early stage of the slow but deadly disease, and prefer to temporize, the removal of the diseased organ, even at a later stage of the trouble, may still effect a cure. The important point is not to wait until a tuberculous inflammation of the genital sphere is added to the descending tuberculosis of the uropoietic system—a course which will happen with almost absolute certainty in the male—not to wait until the other kidney is similarly attacked by an ascending process. The operation *then* will only improve, never cure. It should be remembered that infection of the prostate generally sets in early.

Therefore, in cases of the sudden appearance of the above mentioned symptoms, too much stress cannot be laid upon the necessity of establishing a strictly defined diagnosis as soon as possible, and of carrying out that treatment which alone is the logical sequence of the same, to wit, *early extirpation of the primarily diseased kidney.*

[1] I would refer those who are interested in this subject to an article of mine read before the Section in Surgery of the New York Academy of Medicine, November 11, 1895, which will soon appear in the New York *Medical Journal*, entitled "Catheterization of the Ureters in the Male and Female with the help of Casper's Ureter-cystoscope."

THE RESTRICTION OF TUBERCULOSIS.[1]

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OF the 63,000,000 people living to-day in the United States, 9,000,000 or more will, unless something be done to prevent it, die of tuberculosis. In the census year of 1890, 102,199 deaths are reported as due to pulmonary tuberculosis, or consumption. To the reported deaths, not less than 30 per cent. should be added in order to arrive at the actual number. When this computation is made, it will be found that the annual number of deaths in this country from pulmonary tuberculosis amounts to nearly 133,000; I know of no reliable *data* from which we can ascertain the number of deaths from tuberculosis of other organs than the lungs. However, knowing, as we do, that every part of the body—the skin, the muscles, the bones, the nervous system, the abdominal and pelvic viscera—are all occasional, and some of them frequent, sufferers from the invasion of tubercle bacilli, we will hardly be accused of exaggeration when we state that in all probability this micro-organism is directly or indirectly the cause of not less than 150,000 deaths in this country each year.

Leyden gives the ratio between annual deaths and the total number of infected persons as 1 to 7, and Williams states that the average life of the consumptive among the better-to-do classes of England is eight years. Accepting Leyden's estimate, we see that an average of 150,000 deaths annually indicates that the total number of persons in this country to-day infected with tuberculosis amounts to 1,050,000, or one out of every sixty of the population.[2] These

[1] An address delivered (by invitation) before the Colorado State Medical Society, 1895.

[2] The census of 1890 is used as the basis of these statements.

figures are probably too small. Germany has a population equal to about three-fourths that of this country, and Leyden stated before the International Congress of Hygiene and Demography, at Budapest, last September, that the number of consumptives in the German Empire is not less than 1,300,000, and that the annual deaths from this disease in the same country range from 170,000 to 180,000. However, the estimates which I have given are sufficiently large to render the subject of the restriction of tuberculosis worthy of the consideration of every one who is interested in the welfare of the human race. It should, however, be borne in mind that unless some effort is made to prevent it, the mortality from tuberculosis will increase with improved facilities for travel and the greater ease with which the consumptive invalid, even in the advanced stages of the disease, mingles with and infects the healthy.

It should be stated that the figures given above include only those cases in which tuberculosis progresses and causes death. The number of persons actually infected is indeed so large that one hesitates to give it. The records of the autopsies show that not less than one-third of all men have tuberculosis during some period of life. Bollinger found tubercular lesions in 27, and Massini in 39, per cent. of all cases examined. In 200 post-mortems made by Harris, and in which special attention was given to the detection of evidences of infection, the results were positive in 38 per cent. In the examinations made at the Paris morgue, the percentage of cases in which tubercular lesions, active or quiescent, are formed is, according to Bouchard, as high as 75. Biggs, of New York, found tubercular changes in 60 per cent. of the bodies examined by himself. In 125 autopsies made at the Foundling's Home in New York, the bronchial glands were found to be tuberculous in all. Even when there are no indications to the eye of tubercular infection, the presence of the germ may often be shown by the inoculation of guinea-pigs; thus, in eight out of thirty cases, in many of which there were no recognizable tubercular lesions, Loomis demonstrated the existence of the bacillus in the bronchial glands by the inoculation of animals.

Tuberculosis is a disease which is frequently arrested in the first stage, but it is also true that it often progresses through the second stage and terminates in death. At first it is due to an unmixed infection. The tubercle bacillus finds its way into the human body, develops slowly, and in a large per cent. of the cases remains but feebly active or dies out entirely, leaving the lesions so frequently observed in the autopsies referred to above. If the information which we get from these post-mortem examinations of the bodies of persons dead from accidental causes, or from diseases other than tuberculosis, be correct, and I see no reason for doubting the authenticity of statements made by so many men skilled in the recognition of pathological lesions, then it must be true that tuberculosis, so long as it remains an unmixed infection, is not one of the most fatal of the infectious diseases. The history of inoculation tuberculosis, which has been accidentally induced in man, confirms this view. The instances in which surgeons, pathologists, butchers, dealers in hides, children circumcised by tuberculous rabbis, and others have been accidentally inoculated with this disease, are observed with sufficient frequency to enable us to know quite accurately the history of the disease when thus acquired. In these cases the disease remains for many years, often through life, a local affection; its progress is slow, and it seldom produces death.

Although the tubercle bacillus can be induced, under specially favorable conditions, to multiply on artificial media, it is in nature an obligate parasite, and does not reproduce itself outside of the animal body. Obligate parasites do not speedily destroy their hosts. It is not conducive to their best interests to do so, because their continued existence depends upon that of their host, or on their transference to another host. This is true not only of the tubercle germ, but of the bacilli of leprosy and syphilis. Furthermore, man is not so susceptible to the tubercle bacillus as some of the lower animals are. A pure culture of this micro-organism will speedily kill a guinea-pig, while, as we have seen, its growth in man is slow and liable to temporary, and even permanent, arrest.

The tubercle germ, unaided by saprophytic micro-organisms, seldom kills. One-seventh of the human race in civilized countries die of tuberculosis; but one-third more are infected with the germ. Therefore, in the difference between one-third and one-seventh, or in nearly one-fifth of all men, the disease is present at some period of life, but does not cause death. Of the 63,000,000 of people now living in this country, 21,000,000 have been, are, or will be infected at some time, but only 9,000,000 will die, of tuberculosis, leaving 12,000,000 who will be infected, but in whom the infection will not progress to a fatal termination.

In the second stage of tuberculosis the disease

becomes one of mixed infection. Other pathogenic, or even saprophytic, germs are carried into the infected tissues, and, finding there a soil rendered favorable to their growth by the previous specific infection, begin the process of tissue disintegration. It is probable that the many causes of pulmonary consumption which apparently have their origin in attacks of influenza and bad colds are explainable in this way. The individuals are already tuberculous, possibly have been so for many years; the acute inflammation of the respiratory tract brings with it or is due to the secondary infection, and for the first time tuberculosis is recognized. The sudden appearance of miliary tuberculosis after measles and whooping-cough is probably another illustration of the same thing. That this is the case in pneumonic phthisis, there can scarcely be any doubt. Indeed, the post-mortem examination often shows bronchial glands which have evidently been tuberculous for a long time. There has been much said and written about a pretubercular stage; there is no evidence of the existence of any such a condition as a diseased state. On the other hand, the tubercles often exist long before the disease is recognized, and in many in whom no lesion of a tubercular nature is suspected until the autopsy reveals it.

That the bacillus discovered by Koch in 1882 is the primary and essential cause of all forms of tuberculosis, no intelligent and well-read medical man will now deny. Without specific infection the disease does not and can not exist. While this germ does not destroy every body which it invades, and probably does not, unaided, produce death in many, without it no amount of saprophytic infection can cause tuberculosis. Bad colds, influenza, pneumonia, measles, and whooping-cough do not originate consumption.

The exhaustive researches of Cornet, extending through the years of 1887, 1888, and 1889, and since confirmed by others, have revealed the manner in which tuberculosis is disseminated. The air exhaled from the lungs of the consumptive, even in the last stages of the disease, is germ-free. The sputum in cases of pulmonary tuberculosis, the discharges from the bowels when sputum is swallowed, and in intestinal tuberculosis, the urine in case of involvement of this excretory tract, the discharges from tuberculous sores on any part of the body, the milk and flesh of tuberculous animals are the media in which the germs of this disease exist outside of man's body. As has been stated, the tubercle bacillus does not reproduce itself outside the animal body, excepting under certain artificial conditions. The number of tubercle germs in the sputum on the floor or in the cuspidor does not increase; but in its resting or spore form, it may, under certain conditions which ordinarily exist, retain its vitality indefinitely. The consumptive spits on the floor, and then the sputum dries. The housemaid's broom may scatter the contained germs from time to time; some will settle on the walls, others on the furniture, and still others on the floor again; her broom and brush may knock them about from place to place, day by day, and she may consider herself a fortunate maid if, sooner or later, the micro-organism does not find its way into her lungs.

As many of you know, Cornet collected dust from various sources, and tested the same for the bacilli of tuberculosis by the inoculation of guinea-pigs. These studies showed that the dust taken from rooms occupied by consumptives who were in the habit of expectorating on the floor or in their handkerchiefs, frequently contained the bacillus; while the dust from rooms occupied by those consumptives who were careful to use cuspidors, and never spit on the floor or in their handkerchiefs, was free from the germ. The baccilli are transmitted from man to man or from animal to man. The disease never originates in any other way. The transfer is, as a rule, an indirect one, and we are often unable to ascertain the route by which it is made, but we know that every case of consumption comes from a preceding one. Tuberculosis is a disease which is largely due to infected houses. Flick has shown this to be the case in Philadelphia. Cornet found that 62.88 per cent. of all the deaths which had occurred in thirty-eight cloisters during twenty-five years was due to tuberculosis. Baer ascertained that from 40 to 60 per cent. of the total mortality in prisons in Germany may be ascribed to the same cause. These figures show what alarming fatality may follow restriction to infected houses and rooms. Cornet calls attention to the fact that the mortality from tuberculosis is greater in those cities where the largest number of people have no homes of their own, but move about from house to house. In this manner one infected house may shelter and destroy the susceptible members of many families in the course of a few years. According to Cornet, the following figures give the annual mortality per 1000 inhabitants from tuberculosis in the cities mentioned:

London	2.9	Paris	4.1	Wiesbaden	2.9
Glasgow	7.0	Berlin	3.8	Liverpool	6.4

He does not claim that the frequent inter-

change of dwellings in the last-mentioned cities is the only cause of the great mortality, but that it is an important factor.

When the consumptive knows how, and properly attends to the thorough destruction of the germs thrown off from his body, there is no longer any danger of his becoming a centre of infection. Residence in a properly conducted hospital, arranged especially for the care and treatment of tuberculous patients, would be perfectly safe. The danger of infection in such a house would be much less than that to which the traveller subjects himself every time he passes a night in a hotel. In the latter instance one is assigned to a room, the condition of the previous occupants of which is wholly unknown to him. The bed may have been occupied by a careless consumptive who has scattered the seeds of the disease about him. Wherever we go, we are in danger of being infected, but if certain well known rules should be followed in detail, the infected and the uninfected might mingle without danger. The bravest man may hesitate to walk through a jungle which conceals a single savage beast, but the timid one does not hesitate to approach a whole menagerie of caged lions. Cornet has shown by positive demonstration that, of all places examined by him, where people congregate, the one most free from the chance of accidental infection is the properly equipped and kept surgical operating-room. Here one is less liable to infection than he is in the open street or in the best kept hotel or in a private house.

Frequently we hear it stated that only the weak and feeble acquire consumption, and the fittest survive. A more heartless, false, and unscientific statement was never made. If a man with a loaded gun should be placed at every street corner, his eyes covered, and then all the inhabitants of the city marched down the street, and the man with the gun told to fire into the procession as it passes, would any sane man say that only the weak and feeble or morally bad would be injured? Every soldier in battle is not killed or wounded, although all may face the fire of the enemy. Of two men receiving like gunshot wounds, one may survive and the other die, but the chances of life are greatly increased if neither is wounded. The tubercle germ may kill one and not another, but it injures more or less every person who inhales it. It may develop rapidly in one, slowly in another. Its growth may be continuously progressive in one, while in another it may be temporarily, and in a third permanently, arrested. While there are undoubtedly differences in susceptibility with like exposure, with no exposure the most feeble and unfit will not acquire tuberculosis, and with sufficient exposure there is probably none sufficiently robust to remain immune to this disease. To this the people of Colorado should give special thought. Your climate has a well-deserved reputation of prolonging the lives of consumptives, and they come to you from various parts of the world. This would be all right, if these living bacteriological culture-flasks were not permitted to scatter their contents about them. Mentone once had the reputation of being a most excellent place for the climatic treatment of consumption, but the invalid visitors coughed and expectorated on the streets and in the houses, until the disease became fearfully prevalent among the native-born. The following quotation is taken from an article by Bennet, who practiced medicine at Mentone for many years, and who, at the time of writing this article, did not believe tuberculosis to be infectious:

"During the last few years phthisis has become much more common at Mentone, among the girls and young women, than it formerly was, especially among the washerwomen, a numerous class; and contagion from the linen soiled by the sputa of consumptive patients has been suggested as the cause. I am disposed, myself, to attribute the undoubted increase of phthisis in a healthful Southern locality to other causes; to the mere change in habits and occupations. When I first settled in this region, in 1859, nearly the entire population was agriculturally occupied. All the young women of a village lying on a mountain-side a few hundred feet above a property of mine were thus engaged, working at the soil with their father and brother, carrying stones and earth in baskets on their heads. They were fine, healthy, robust girls and women, fed on macaroni, olive oil, and wine, worthy to be *matres hominum* (mothers of men). I often had half a dozen working for me in this way, tripping lightly over the rocks and hillsides, heavily weighted. I employed them at that time with some compunction, which I should not feel now. Times have changed; the Grimaldi girls have all become town workers, washerwomen, seamstresses, servants, and they begin to die of consumption. Is it not because they work in close, badly ventilated, damp rooms, instead of in the open air? Is it not again a question of rebreathed air, not of contagion?"

The authorities of Colorado Springs and other health resorts in this State should profit by the lesson taught at Mentone. I do not propose to discuss the relation of climate to consumption; but if I may be permitted, there are a few facts that have been largely overlooked, and which I believe to be important. A given place may be a good one for an infected person to live, and an equally good one for the uninfected to shun. There is no evidence that climate gives immunity to this disease. Acquiring tuberculosis and arresting its progress when once acquired are different things. The best thing to do is to avoid

the former. The place to avoid infection is not where there are no consumptives, because there is no such spot known in the civilized world, but where the consumptive disinfects the sputum and does not expectorate on the floor or in his handkerchief. It is true that it is not a good thing for the consumptive to inhale new supplies of the tubercle germ from time to time. In this way new areas of lung tissue become involved, and the disease extends; but, as we have seen, the tuberculous person must especially endeavor to prevent the engrafting of a saprophytic infection upon the specific one already established. Therefore, an aseptic atmosphere is the one in which the consumptive should live; and the more nearly aseptic the atmosphere, the longer, other things being equal, is the infected person likely to live. I will not claim that there is no value in altitude, relative humidity, etc., *per se*, but I do hold that an air free from pyogenic and putrefactive micro-organisms is the one where our patients do best, whether it be on the plains of Egypt or on the mountain-tops of Colorado. Dryness of the air is conducive to the alleviation of consumption, because to the extent to which it is dry the air is aseptic. Sunny climes are beneficial, because bright sunshine is a most potent germ-destroying agent, and its effects extend over large areas. The large proportion of cloudless days which you have here in Colorado constitutes one of the valuable features in your climate. The purifying effects of the sunlight are undoubtedly intensified by the rarity of your atmosphere, due to your altitude. No one can deny the value of climate in the treatment of tuberculosis, and all agree that your climate has proved to be of pre-eminent value in its good effects upon this class of invalids.

However, believing, as I do, that saprophytic infection plays so important a rôle in the progress of tuberculosis, I must emphasize the necessity of attending to local sanitary conditions. There is no part of the earth possessed of a climate so salubrious that man may not vitiate its good effects. After some years of experience in advising tubercular patients in regard to climatic treatment, I have come to the conclusion that I will not send any more of them away from home, unless they will promise to place themselves under the care of some physician whom I know will be willing and capable of advising them in the choice of a residence. I believe that a consumptive who lives in a house well ventilated and well drained in Michigan is more favorably located than he would be living in an unsanitary house in Colorado. Of course, if he can be out of doors most of the time he is better off here; but even then, if he must sleep in a small, unventilated, dirty bedroom, it is questionable whether or not it is wise to advise the change. With organic matter to feed upon, and with heat and moisture, saprophytic germs will thrive and find their way into the lungs of those who inhabit the house which those micro-organisms infest.

All of the preceding is the introduction to what I wish to say as to the restriction of tuberculosis. Fortunately for you, however, the prologue is longer than the body and conclusion of my discourse.

Bearing in mind two points which I have endeavored to enunciate, I will proceed. First, however, let me restate these two facts which I believe to be of fundamental importance. They are as follows: 1. Primarily, tuberculosis is, in many cases at least, an unmixed infection, and in this form it seldom proves fatal. 2. When tuberculosis becomes a mixed infection, its natural course is to terminate in death.

We are to restrict the disease by preventing the primary infection. How can this be done? Only in one way, by the destruction of the infecting agent. The places where the tubercle bacillus is found outside of the human body have already been enumerated. We must stop the sale of milk and meat from tuberculous animals. This can be done by the inspection of animals in the dairy and in the stockyards by competent, skilled veterinarians. The experiments of Ernst and others have shown that milk may, and often does, contain the bacillus, even when no local lesion on the udders exists. No one should be allowed to sell milk without a license, and this should be granted only after the employment of the tuberculin test. Whether any part of the carcass of a tuberculous animal should be eaten or not may be regarded as a question yet unsettled, but none of us would like to eat the flesh of such an animal, and there would be no meat famine should it be wholly excluded from the market. Moreover, if this test were universally applied, the spread of the infection among cattle would be greatly lessened, and from an economic standpoint it would pay. I have great confidence in the tuberculin test as applied to cattle. Only a few days ago I saw it tested on one of the finest herds in Michigan, and every cow which gave a reaction revealed at autopsy a tubercular lesion.

The greatest work must be done in the disinfection of the sputum and other germ-containing excretions from the human body. Much good can be accomplished by the circulars now being quite generally distributed by boards of health,

but this agency is insufficient and incomplete. There are details which even the most conscientious and intelligent are not likely to get from the most explicitly worded printed directions, and these details are all important in the accomplishment of our object. When we recognize the fact that we must teach the unlearned and careless as well as the intelligent and painstaking, the inadequacy of printed directions become all the more evident. To depend wholly upon such information would be like teaching chemistry exclusively from textbooks. The most intelligent student cannot become a skilled bacteriologist with the best library on the subject in the world, unless this be supplemented by practical work in the laboratory. If the trained student need such practical demonstrations, how much more must they be essential to the patient, who generally is wholly without scientific knowledge? The surgeon who has no laboratory instruction in bacteriology continues to lose his patients after operations, by neglect of the details of asepsis. How, then, can we expect the factory girl with tuberculosis to carry out the details of the disinfection of her sputum so thoroughly that she will cease to be a centre of infection? Lectures from the wisest, and books by the most learned cannot, unaided by practical work, make successful farmers or mechanics. The details necessary for the complete destruction of the agents of infection can be taught only by practical illustration. Schools for the instruction of consumptives in the methods of taking care of themselves and preventing the spread of the disease to others should be established. This would result in lengthening their own lives, in rendering them more comfortable while they do live, and would save many others from infection. These schools should consist of model hospitals, where the consumptive would be both patient and pupil.

I believe that every State should establish one or more hospitals for the education and treatment of its consumptives. Possibly it would be better if the general government should undertake this work; and by the proper selection of sites, the advantage of climate would be added to other therapeutical measures employed. These hospitals would have a twofold use. The training of its inmates in methods of restricting the disease would be of untold benefit, and it is now generally conceded that the institutional treatment of the disease is the most successful. Only in such institutions can the dietetic and hygienic treatment be carried out satisfactorily, and all will agree that this is of more importance than the use of medicinal agents. At the Falkenstein Hospital for Consumptives it is stated by Leyden that the cures amount to 24 per cent.; and I am sure that this cannot be equalled in private practice, even when aided by the specially favorable climate of Colorado.

But, says one, the experiment which you propose would be, if carried out, an expensive one. This is true, but is it not also true that we are paying heavy tribute to this plague at present? How much loss in money do the 150,000 annual deaths from this disease entail? How great a financial loss will it be to this country when one-seventh of those now living become its victims, many of them after years of sickness, during a larger part of which time they will be unable to earn their daily bread? I will not attempt to name a money value of these lives. The question is above any financial consideration. It is one of the welfare of the human race.

Has anything of this kind ever been done? Yes, fortunately we have a parallel in the method by which leprosy was eradicated from Europe. Hirsch tells us that after the wars of the Crusaders, leprosy became fearfully prevalent all over Europe. Our ancestors recognized the fact that there was only one way of ridding themselves of this plague. At one time, according to the same authority, there were no less than 1900 leper-hospitals or retreats in Europe. The leper must live in one of them. He could go from one to another; but if he traveled by day he was compelled to wear a distinctive garb by which he could be recognized and shunned; and if by night, he must carry a bell, the constant tinkling of which would warn those whom he should meet. Now, by a much more humane method, we can, and our descendants will, I believe, stamp out tuberculosis. In the plan which I propose it would not be necessary for every consumptive to go to such a hospital, nor would it be necessary for even the incurables to remain in these places indefinitely. The intelligent tubercular patient may live in intimate relation with his family, so soon as he knows and will practice the rules necessary to prevent infecting others. There is nothing cruel in the proposition which I made. On the other hand, it has everything to recommend it from a humane and even a sentimental standpoint. A distinguished German writer on tuberculosis has stated that "the healthy should be considered before the sick." I would say that every comfort should be extended to the invalid, and that there should be no suffering in this world which human skill can relieve.

THE POSITION OR POSTURE OF THE PATIENT DURING PARTURITION, WITH SPECIAL REFERENCE TO THE MERITS OF THE WALCHER POSITION.

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IN the practice of obstetrics in this country the most of us have become so accustomed to the dorsal position of the patient during the second and third stages of labor that the question is seldom asked, by the average obstetrician at least, whether there is any position which is more advantageous for either parturient or *accoucheur*. Habit enables us all to use with comfort and satisfaction measures and appliances which to others may seem clumsy and ill advised. We are loth to change that which suits us and seems to answer our purpose. Our American women seldom have pelvic deformity to an extent which would prevent delivery by the natural passages, and though it has been asserted by distinguished authority that the average weight of American infants at birth is somewhat greater than that of European infants, even this fact, if it be a fact, does not seem to offer sufficient obstacle to call for radical changes in the present methods of conducting labor. In cases where operative interference becomes necessary, we are accustomed to make use of the lithotomy position, which, while it fixes the pelvis and gives us a basis of support, also diminishes the antero-posterior diameter of the pelvic brim, and hence must theoretically increase the difficulties of delivery. Practically it seldom does; there are few instrumental deliveries attempted, by men of ordinary ability as obstetric surgeons, which are not carried to completion. In view of all these facts, there are many men, of excellent ability in the usual course of obstetric experience, who do not feel the need for the refinements of obstetric knowledge to the same extent as those who practice where pelvic deformities abound. Many physicians, if they acquired these refinements, would forget them in the intervals of their application.

The position with which the dorsal comes most into competition is the left lateral, sometimes called the English, position, which is spoken of with great favor by many of our most experienced obstetricians. It is chiefly applicable for normal, that is, non-instrumental, deliveries, for while instruments of various kinds could be applied in this position they would be used at mechanical disadvantage, and the antero-posterior diameter would be subjected to practically the same conditions of shortening as in the lithotomy position. The only advantages which are claimed for the English position are that the sensibilities of the patient are spared by non-exposure, or supposed non-exposure, of her person during delivery, she is spared the annoyance of being moved about before and after delivery, and it is said the perineum can be better protected against rupture. In regard to the first of these so-called advantages, it is possible to deliver in the dorsal position without exposure; and as to the second, a change to the dorsal position becomes almost imperative if any reparative operations upon the vagina or uterus are indicated after labor is completed, and the annoyance of moving her thus becomes essential. The perineum can be protected in the dorsal as well as in the lateral position.

For myself I prefer to deliver always in the dorsal position unless some objection to that position is offered by the patient.

The proposition has been advanced that if we observe the position of parturients in a social condition which has been uninfluenced by civilization, that is, among savages, or those who were only slightly removed from the animals, we should see the teachings of nature and learn thereby the conditions of position which were most favorable to natural and easy delivery. This presupposes, of course, that nature always impels parturients, in the animal stage of development or the stage which is not remote from it, to assume the position which is most favorable to delivery. As a matter of fact, such a supposition is not correct. Nature does not always direct one to the most favorable position, and even the animals in their experiences in labor would sometimes be benefited if they had the advantage of intelligent advice in regard to the position which they should assume. Among savages we sometimes see the crudest and cruelest attempts to assist nature, which could not fail to produce other than a fatal result to the mother, if not to the child, in any but the most robust physique. In any labor which is at all abnormal, especially if there is disproportion between the fetus and the canal through which it is to pass, the best results must come in those cases in which there is an intelligent understanding on the part of the *accoucheur* of the mechanical principles which are involved in the act of labor and the way in which they are best applied; or in other words, when labor is anything more than a normal physiological act, cultured intelligence is a better midwife than uncultured nature.

Before considering the positions which have

been in vogue in the past, during parturition, it is desirable to recall a few fundamental points, and I refer especially to those cases in which there is no considerable pelvic deformity. The bony pelvis, through which the fetal mass must pass, is not an absolutely unyielding and immovable body—it is provided with a series of joints, with cartilaginous attachments, which, like cartilages everywhere, are capable of more or less distention unless ankylosed by disease. The limit of this distensibility in a given case cannot be specified in advance; it is often greater than is commonly supposed, and this fact is too often ignored in our haste to perform brilliant surgical operations. The following case will illustrate this point:

I was called a few years ago to see a woman in an advanced period of pregnancy, with the view of attending her in her confinement. She was short and deformed, and the antero-posterior diameter of her pelvis so contracted that I could not readily insert two fingers between the symphysis pubis and the promontory of the sacrum. I told her that an operation would be necessary in order to give her a living child, and believed that I had a fine case for cæsarean section. She responded that she had given birth to four living children, all of them being delivered by the breech, and that instruments had never been required. I saw the children, with deformed heads, it is true, but otherwise healthy in appearance. She did not require my services when her labor took place.

Another important point is that the contraction of the uterus, and not that of the abdominal and pelvic muscles, is the essential force in the extension of the fetus; contractions of the latter are often helpful and subsidiary, but they are not the chief factor. A position is seldom essential, however helpful it may be, which brings the abdominal muscles into conditions most favorable to mechanical advantage. On the other hand, it cannot be denied that there often seems to be an advantage in bringing these muscles into play by assuming certain unusual positions. King recently advocated the squatting position as an aid to labor. The analogy from defecation makes it clear that it would sometimes be helpful, especially when the head is near the outlet of the pelvis, and King narrates cases in which by assuming this posture a vicious position of the fetus was converted into a favorable one. It is evident, however, that even this simple expedient would not always be practicable a sensitive woman in the agonies of labor pains would find difficulty in supporting herself and exercising her abdominal muscles, even if she were disposed to make the attempt.

The advantages of position in such an accident as prolapse of the funis must have occurred to all. For this accident the knee-elbow position of the patient and replacement of the cord often serve a most valuable purpose.

Another position for the accomplishment of the same end, which, so far as I know, has not been alluded to by obstetric writers, is the Trendelenburg, and this really anticipates what is to be said in favor of the Walcher position.

In an interesting communication read before the American Gynecological Society in 1880, Dr. George J. Engelmann, then of St. Louis, gave an account, profusely illustrated, of the parturient posture among women of all people, ancient and modern. A careful study of this paper confirms me in the statement already made that it is not safe to conclude that any parturient position is the best and most correct one merely because nature or the custom of unenlightened savages and barbarians has dictated its use. An analysis of this paper reduces the various groups of positions to the standing, the inclined, and the horizontal. In the first, the parturient may be unsupported, supported, or more or less suspended. In the second, she may lie upon a bed or couch of any kind, squat or kneel in varying degrees of inclination. In the third, she may lie upon the back, side, or abdomen.

In all these positions the object which is apparently sought is not merely to facilitate the passage of the fetus through the parturient canal by dilating and straightening it as much as possible, but to mitigate the agony of the process by terminating it as quickly as possible, or by diverting the muscular strain to parts of the body not immediately associated with the parturient act. Those procedures seem best adapted to attain these ends which bring the pelvic joints into the greatest degree of extension—in other words, which lengthen the antero-posterior diameter and render the pelvis as roomy as possible. Of the methods figured by Engelmann, the suspended and the dorsal-recumbent are most effective in this respect. For obvious reasons, the former of these is usually inapplicable. The principle of extension may, however, be borrowed from this crude measure and applied to the recumbent position, and it is the good fortune of Walcher to have recently called the attention of the profession to its importance, more especially as an expedient which would obviate the necessity of symphy-

siotomy in cases in which that operation would otherwise be required.

Let us now turn to the evidence concerning the mobility of the pelvic joints, which will also be found to have a direct bearing upon the assertions of Walcher. In a paper by Matthew Duncan published in 1854 (*Dublin Quart. Jour. Med. Sci.*, 1854, XVIII, p. 60), it was stated that in the guinea-pig there was a separation of the ligamentous tissue at the pelvic symphysis during parturition of an inch or more, which was also accompainied with a relaxation of the tissues of the anterior or inferior portion of the sacro-iliac joint, and more or less freedom of motion. In the cow also, as shown by Barlow (*Edinburgh Monthly Jour. Med. Sci.*, 1854, p. 83), there were enlargement and thickening of the great sacro-sciatic ligaments in the latter part of pregnancy, with lengthening and slackening of the same. This enables the sacral joints to move more freely, the ilia moving freely on the sacrum in an antero-posterior direction analogous to the flexion and extension of the limbs, hence producing enlargement of the genital passage.

These investigations upon animals are of great importance in suggesting analogous changes which must more or less frequently take place in the pelvis of the human female during parturition. But Zaglas had already, in 1851, showed (*Edinburgh Monthly Jour. Med. Sci.*, 1851, Sept., p. 289) that in the human pelvis there is motion of the ossa innominata in an antero-posterior direction; that when the body is erect the promontory of the sacrum is least projected into the brim of the pelvis; that its apex is therefore thrown forward, diminishing the outlet and relaxing the sacro-sciatic ligaments.

Duncan, therefore, feels warranted in saying that in the latter half of pregnancy there is relaxation of the pelvic joints. This statement is confirmed by observations of Mme. Boivin and Chaussier, the former noticing a separation of the pubic bones during parturition to the extent of one inch. Boyer also noticed a separation of the sacro-iliac joint, to the extent of half an inch.

Similar observations were made by Smellie, Diemerbroek, and Denman. Mme. La Chapelle even mentions dislocation of the ilium upon the sacrum during labor; and others have observed simultaneous dislocation of both ilia.

"These alterations in the dimension of the brim and outlet," says Duncan, "by movements of the pelvic joints, are not insignificant, but the reverse, and can be confirmed by every obstetrician of experience." When the limbs are flexed upon the pelvis the outlet of the latter is increased, but the inlet is diminished.

The sacrum may therefore be supposed (Duncan) to have a motion around an imaginary transverse axis, the promontory advancing downward and forward, while the axis moves in the opposite direction, and *vice versa*. In the non-pregnant woman a movement downward of the promontory of two millimetres diminishes to that extent the conjugate diameter of the superior strait, while the apex of the sacrum by a corresponding movement is displaced upward by four millimetres, increasing the tension of the sacro-sciatic ligaments and the dimensions of the inferior strait.

These movements are habitually seen in defecation, but offer the greatest interest in women during parturition. There are raising and lowering of the pubic symphysis, the ossa innominata being mobile upon the sacrum, or, if the latter is considered as mobile, it may be regarded as rotating around an imaginary transverse line passing through its second vertebra. By elevation of the pubic symphysis, or inclination forward of the promontory, the angle of inclination of the pelvis is lessened and the conjugate diameter of the superior strait is diminished by four to six millimetres.

These anatomical investigations and conclusions concerning the variations in the conjugate diameter of the pelvis, according as flexion or extension is practiced, have been confirmed by various observers. Ahlfeld investigated the subject in 1876, and showed that the position of extension (practically the Walcher position) was used in Italy as early as the last century (*Schmidt's Jahrbücher*, 1876, B. 179, S. 185).

Hermann Meyer reached the same conclusion in 1878 (*Arch. f. Anatomie und Entwickelungsgeschichte*, 1878, p. 8). Crouzat, in 1881, found by extension and flexion of the pelvis in cadavers that a variation of eight millimetres in the antero-posterior diameter could be obtained.

Farabœuf, Klein, Walcher, and Jewett have made similar investigations, with practically the same results. I have carefully examined the papers of all these writers, and find their statements harmonious, as above stated. If, therefore, limited mobility is found in the pelvic joints of the cadaver and the non-impregnated woman, much more should we expect to find mobility in the joints of the parturient woman. The statements of Walcher are therefore based upon substantial anatomical facts. Walcher has been considered

an enemy by the advocates of symphysiotomy, especially by Varnier, who wrote a long paper in its defense as compared with the Walcher position ("*Les bassins rétrécis sont ils dilatables sans symphysé-otomie*," *Ann. de Gyn. et d'Obst.*, 1894, XIII, 428). That he is the enemy of symphysiotomy is denied by Walcher; but inasmuch as in the five hundred and fifty labors which he annually saw at the maternity at Stuttgart there had been no cases requiring symphysiotomy (one case in 1894 requiring cæsarian section), all parturients with narrow pelvis being satisfactorily treated by means of the position of extension, with possibly the addition of some operative measure less severe than symphysiotomy, he could not be expected to favor the latter, as there is at least the possibility of ankylosis or a movable joint as a consequence, in addition to the danger to life (Morisani, the most brilliant and experienced of all who have practiced it, giving at the Rome congress, in 1894, a mortality of nearly 12 per cent. for both mothers and children).

There is also to be considered the danger to the urethra, bladder, and vagina (*Cent. f. Gyn.*, 1894, p. 584). Walcher's thesis in regard to the position of extension, the so-called *Hängelage*, was made in 1889 (*Cent. f. Gyn.*, 1889, LI, p. 892), and was that the conjugate of a narrow pelvis was not a constant quantity, but might vary according to the position of the woman. If a woman were placed in the dorsal position, the legs flexed on the thighs, and the latter on the body, the body being somewhat elevated, the promontory of the sacrum may be readily reached by the finger in the vagina. In that position the conjugata diagonalis, according to different observers, measures from 9.7 to 10.4 centimetres. If now a pillow be laid under the sacrum and the legs allowed to hang downward, over the edge of the bed or table, as far as possible, the promontory may be felt receding as the knees drop, and the conjugate will then measure 10.5 to 11.6 centimetres. Six observers are mentioned who made a series of measurements under these conditions, and they observed a gain of 8 to 13 millimetres. The knees being again raised and the pillow removed, the original measures were obtained. A gain of 1 centimetre may therefore be obtained in the antero-posterior diameter between extreme flexion and extreme extension; it is sometimes less and it is sometimes much more.

What is the practical application of this fact? This question is best answered by reference to the reports of those who have made use of Walcher's suggestions. Aside from Walcher himself may be mentioned Kalt, Wehle, Fehling, and Dührssen.

Kalt (*Cor.-blatt f. schweiz. Aerzte*, Basel, 1894, XXIV, 652) described in detail three cases:

1. Vpara, 31 years of age; requiring assistance in her first, third, and fourth labors. After a very slow first stage the Walcher position was used for three-quarters of an hour. The head then entered the pelvis, passed the promontory, and 15 mintues later the child was born without further assistance.

2. IIpara, 33 years of age; first labor instrumental. In the second, after the head had engaged, the Walcher position was used, and in one and a half hours a large child was born without further assistance.

3. IIpara, 34 years of age; first labor normal. Labor progressed slowly, a foot presenting. Walcher position, living child born without further assistance.

Kalt concludes, therefore, that the position is useful in generally contracted pelvis, or with a short conjugate diameter, to avoid the high forceps operation or symphysiotomy.

Wehle (*Arch. f. Gyn.*, XLV, 322) reports eight cases, seven of them having a narrow or a flat pelvis. The eighth case was an VIIIpara, in which the Walcher position was used after the head had been delivered, the shoulders being detained; delivery quickly resulted. The position was also used with operations for version, for extraction, for extraction after craniotomy, and for the high-forceps operation after symphysiotomy. It enabled Wehle to deliver with forceps after attempts at delivery in the dorsal position had proved futile. Wehle concluded that the best results from this position were to be obtained with a dilated os and intact membranes.

Dührssen advocates this procedure as an adjunct in operative measures which are necessitated by a short conjugate.

Fehling (*Münch. med. Wochen.*, XLV, 1894, 861) advocates the Walcher position as an adjunct to the expression procedure of Hofmeier, for the delivery of the after-coming head, for high-forceps operations, and in cases in which there is a short conjugate. He so elevates the mattresses that the requisite extension will be obtained with the legs covered in the bed, a modified Trendelenburg posture. He narrates the following three cases:

1st. IIIpara, 28 years of age, with a generally contracted, flat pelvis. Her first labor was a severe instrumental one, the child being born dead. In her second, the position was transverse, version was performed, and a dead child was the result. In her third, a bougie was intro-

duced to bring on labor, this being followed by rupture of the membranes. On the second day there were weak pains, on the third and fourth none, on the fifth they were occasional, and on the sixth they came every ten minutes. From 8 to 12 P.M. the Walcher position was used, at 12.10 the head engaged, the membranes again ruptured, and at 12.40 a living child was born in the first vertical position. The conjugate diameter measured 9.8 centimetres.

2d. IIIpara, 25 years of age, with simple flat pelvis. Pains were intermittent in character for six days, and on the seventh, the os being moderately dilated, the Walcher position was assumed, delivery then resulting after three hours.

3d. Ipara, 25 years of age, generally contracted pelvis. After labor had continued several hours and moderate dilatation had resulted, the Walcher position was resorted to. At the end of five hours there was a decidedly febrile condition of the patient, and delivery was concluded with the forceps.

The authors who have been quoted include all the literature upon this subject, so far as I have been able to find it; and as several of them are men of vast obstetric experience and honorable reputation their indorsement of this contribution to the mechanics of labor may be considered important.

The only discordant voices come from those who seem to fear that in some way or other symphysiotomy will suffer by comparison with this simple and usually harmless procedure.

What, then, are the indications for the use of the Walcher position, and what its objections?

1. Cases of protracted labor in which the dimensions of the pelvis are normal or the antero-posterior diameter is somewhat shortened, the head being above the brim. The patient being placed in the position of extreme extension for an hour or more the pelvic joints may become so relaxed, or the antero-posterior diameter lengthened by the necessary half-inch, that the head will engage and labor be terminated normally or with forceps; the high forceps, version, or symphisiotomy being avoided.

2. Cases in which version, either cephalic or podalic, has been performed, or footling or breech cases. The flat pelvis, the generally contracted pelvis, transverse positions, occipito-posterior positions, are in this category. The cases which were quoted show that in some instances labor will be terminated naturally, and that in others the forceps must be used as an adjuvant.

3. Cases in which some form of operative procedure has already been adopted without success. It has thus far been used after high-forceps operations, version, symphysiotomy, craniotomy, and low forceps, and it will probably be shown to have a yet more extensive field.

The length of time during which this position may be used to advantage depends upon the effect which it produces upon the patient. It has been shown by those who have used it that it may be discontinued and re-employed without disadvantage, and sometimes with positive advantage.

After the legs have been suspended half an hour or an hour, it would usually be desirable to discontinue the position for a time, since it is tedious and may cause interference in the venous circulation of the legs and thighs. After a rest of an hour, the position can be resumed if necessary.

The application of the forceps in this position will probably be found less easy than in the classical lithotomy position. It may be that this difficulty can be remedied by placing the patient in the Trendelenburg position, in which the condition of extension would still be preserved.

The contribution of Walcher to practical obstetrics is certainly a valuable one, and will often prove as useful as it is simple and harmless.

ENURESIS.[1]

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PERHAPS no minor ailment of childhood is more annoying to parents, and particularly to mothers, than is a persistent incontinence of urine in a child. The degree of severity may vary from an occasional wetting of the bed to a constant dribbling of urine day and night, making of the unfortunate victim an object both foul-smelling and repulsive.

It is not the object of this paper to describe those cases in which some anatomical defect, either congenital or acquired, exists, but rather to briefly speak of the more common causes, and what have seemed to me to be the best methods of treatment.

That heredity has a bearing on this subject is made manifest, not only because occasionally one secures a definite history of similar antecedent trouble in the parents, but especially from the fact of its frequent occurrence in several children of the same parents. Of the constitutional, predisposing factors may be mentioned anemia, tuberculosis, chorea, rachitis, and indeed any disorder which chronically tends to

[1] Read before the El Paso County Medical Society, Colorado, November 13, 1895.

keep the system in a lowered or depraved condition. The importance of securing and maintaining a thoroughly healthy gastro-intestinal tract in this as in so many of the diseases of children should always be borne in mind; for certainly, when by improper or irregular feeding the digestive organs become disordered, an aggravation of any tendency to enuresis is assured.

The local condition should not be overlooked: phimosis, adhesions between the foreskin and the glans penis in the male, and possibly adhesions about the glans clitoridis in the female; also the presence of a vulvo-vaginal catarrh, an anal fissure, or irritation from pinworms, should all be remembered as possible aggravating, if not determining, causes of this malady.

An examination of the urine ought never to be neglected. An over-acid or excessively alkaline state of the urine may alone cause the incontinence; and the possibility of diabetes or Bright's disease, stone in the bladder, or cystitis being present will be remembered, if by a systematic examination of the urine evidence toward any of these diseases is found.

Remote reflex causes have of late years been brought more prominently to notice. The relation between adenoid growths of the naso-pharynx and enuresis has been sufficiently often observed to make it seem probable that in some instances the one somewhat influences the other, or both have some underlying common cause. Epilepsy, of traumatic origin, seemed related to enuresis in one case that came under my notice. Dr. Gould has given us unmistakable evidence of the possibility of eye-strain causing this condition. He cites a number of such cases in the MEDICAL NEWS of December 15, 1894. Perhaps when all such possible causes have been eliminated, we shall have to fall back to that most common of all causes, which for lack of a better name we term the "neurotic diathesis," or an unstable or perhaps an unevenly balanced nervous system.

We must remember, as Money puts it in his work on Disease in Children (p. 380), "the great frequency of incontinence is an excellent illustration of the causes of infantile nervous pathology, that the cord is dominant and cerebral inhibition subsidiary. . . . The child is much more a machine of reflex activities than the adult." We can then see how with a naturally heightened spinal action a slight increase in the usual stimulation given by the urine to the afferent nerve endings at the neck of the bladder, and this continued for a little while, will engender a *habit* of incontinence, especially when, during sound sleep, the normally slight controlling inhibition of the brain is still further lessened.

Prognosis.—The prognosis of these cases as to ultimate cure is fairly good. Most of them will regain control of the bladder at or before the time of puberty, as the domination of the brain, and with it the volition, over the cord and the purely reflex actions, develops.

Some cases, however, do not get well without treatment. To utterly neglect such cases, hoping that, when 13 or 14 years of age shall have been attained, the affliction will be cured by nature, is only in that degree to strengthen a habit which, if the enuresis should not be cured then, will be yet more difficult to overcome. Besides this, many years of most annoying discomfort may be spared, even these self-curative cases by judicious treatment.

Treatment.—The remedy for any one of the local causes which have been mentioned will suggest itself. Phimosis should always be relieved, but I believe that circumcision is not always necessary. Many foreskins that seem irreducible can by steady backward pressure be made to uncover the glans penis and permit the accummulated smegma to be removed, adhesions to be broken, and the parts thus uncovered to be cleaned and oiled. If such a procedure be done once a week for a few times, the necessity for circumcision will be obviated.

I have seen large numbers of children, and many with apparently tight foreskins, but I have never failed to retract the prepuce in any such case when attempted in a child under five years of age. There are many surgeons who hold that circumcision is desirable in children in any case; with such I have no quarrel; but that it must be done necessarily for purposes of cleanliness, I cannot maintain.

A means of relieving these cases which is very commonly neglected is the regulation of the diet. *Tea* and *coffee* are often given to children; and in the larger cities, where beer is so commonly used at the table, not infrequently do we find it given to them also. I have known of one instance where beer was given to a child seven months old. These beverages should be absolutely interdicted. No child under puberty should be permitted to indulge in tea, coffee, cocoa, or any alcoholics. When we consider the pronounced effect that such beverages have on the nervous and genito-urinary systems, we can see how baneful the results of indulgence in them may be. In addition to this restriction of the beverages used,

it is wise, it seems to me, to limit as much as possible the use, by these children (and it were better for all children), of sweets and pastry, such as candies, cakes, pies, jams, jellies, and sugared preserves.

By doing this the stomach and intestines are kept in a better condition, and that important factor which we call the general health of the child is maintained. Of the medicinal agents advanced, nux vomica has not been of advantage in my hands, though advocated by some. In the few cases in which I have tried it, it has seemed rather to aggravate the condition by its stimulation of the reflexes. The bromides, which theoretically ought to be indicated, seem not of themselves to be of much benefit, for while they deaden the activities of the spinal reflex centres, they also deepen the sleep and so lessen the cerebral inhibition. Ergot, when the sphincter vesicæ is the chief delinquent, is certainly of benefit; but as this alone is not commonly the cause, we find more benefit from it as an adjuvant to other means. Phosphorus, while in a sense a nerve food, is rarely indicated for the condition of enuresis alone; but when this state is associated with the general condition of malnutrition which we call rachitis, it is clearly indicated. I have seen one case where this remedy given for the rachitis present was evidently of decided value in relieving the incontinence; for when the phosphorus was temporarily stopped, the incontinence, which had been controlled by it, recurred, to be again controlled by its renewal. Iron and cod-liver oil will be called for only as the system at large demands them. Belladonna or its alkaloid atropine will control most of these cases, if pushed to its full physiologic effect, *i.e.*, to a beginning scarlatiniform rash. This will often require very large doses. To a child 4 or 5 years old $\frac{1}{60}$ of a grain of atropine in divided doses may be given; generally not more than $\frac{1}{100}$ should be the commencing dose. If only nocturnal enuresis exists, the alkaloid is given at bedtime, and increased by giving it oftener, say four and two hours before, as well as at bedtime, until either the urine is controlled or the belladonna rash appears. Bladder control having once been secured, the dose necessary is maintained for some fair period of time (several weeks), and then gradually reduced.

In a few cases, where used by me, beneficial effects seemed to be secured by the use of the fluid extract of sweet sumach (*Rhus aromatica*), given with equal parts of glycerine and water (3 i of the mixture), three or more times daily, the last dose at bedtime. In those cases that do not tolerate the belladonna well, this should be given a trial.

When the trouble is nocturnal only, the fluids ingested toward night should be strictly limited. The evening meal should be as dry as possible, and no fluids given thereafter. As a consequence the urine will be more concentrated, and probably more acid, yet the gain in the lessened volume and lessened pressure will more than compensate for the increased acidity. It seems to me helpful also in these cases to have the foot of the bed, in which the child sleeps, elevated so that its shoulders shall be lower than its hips, and consequently the urine will collect at the fundus rather than at the more reflexly sensitive neck of the bladder. A small pillow for the child's head is perfectly allowable. As these children generally sleep very soundly the inconvenience occasioned by the position of the bed will scarcely be noticed.

At the time the parents retire, the child (who will have been asleep several hours) should be awakened and urged to empty its bladder. The parents can also learn whether, during these earlier hours of sleep, the child has already wet the bed or not. Generally, it will be found that the incontinence occurs later in the night. The bedclothing should be sufficiently warm, and if the child be prone to kick and toss about at night the bedclothing should be more carefully secured by pinning with large safety-pins to the mattress or otherwise, and the child should be clothed with a single-garment night-dress which encases the feet as well as the body. In this way a chilling of the surface of the body, with consequent proneness to reflex contraction of the bladder, will be avoided.

It is decidedly helpful for these children if once a day they receive a tepid or warm bath, followed by cool or, better, moderately cold sponging quickly applied over the body generally, and especially cold sponging down the spine, followed by brisk rubbing and drying of the body. The atmosphere of the room in which the bath is given, however, should always be warm, else the bath may do more harm than good. In the summer-time, sea-bathing may advantageously take the place of the home bath for older children.

Should the age of puberty be passed without control of the bladder having been secured, a much more serious problem will present itself. Diet, hygiene, and medicine may all fail us then, and why? Because by frequent reflex habit the

bladder has become intolerant of more than a few ounces of urine, and when these have collected the bladder becomes fully distended and empties itself during the night and demands frequent attention during the day. In such cases the bladder must be forcibly but gradually distended until capable of holding an amount commensurate with the age of the patient.

APPLICATION OF X RAYS FOR EXHIBITING INVISIBLE OBJECTS IN MOTION.

By EDWARD P. THOMPSON, M.E.,
OF NEW YORK.

DR. MCKAY, of the Packer Institute, Brooklyn, N. Y., tested my idea termed a scheme in the *Electrical Engineer*, New York, as to the possibility of exposing upon a fluorescent screen the shadows of invisible objects in motion. We saw in what is conveniently termed a kinetoskotoscope the motion of the bones of the fingers when bent backward and forward, the shadow of the rest of the finger being faint. The result was so successful that I noticed a curious feature which was not known to me before, and that is that the bones appear in an end view to be at the back of the finger, and very thin measured from the back to the front. There is a reason for this, I suppose, in that the inner side of the finger should be more like a cushion, so as to be better able to handle objects. An experiment was also performed consisting in opening and closing a pair of pincers which were absolutely invisible to the eye, but the shadow of the moving parts was clearly visible upon the screen. A chain was shaken back and forth; and the separate links moving relatively to each other were clearly visible. These experiments would prove that with the present condition of the X rays the skeleton of a fish could be seen to move backward and forward in the act of swimming, as well as the skeleton of all small objects while in motion, and performing the functions of life. I think that some of the best objects to be looked at while in motion would be, for instance, a bird, through which the rays so easily pass except as to the skeleton. All youthful forms of life could be examined, very probably, by this means, and the motions exhibited. I have for two or three weeks been trying different kinds of experiments, and I find that certain precautions are necessary in order to obtain the best results. In the first place, it is perhaps necessary to show just how I made my fluorescent screen, because I find that others have tried to make it by crystallizing the chemical barium platino-cyanide from a solution upon a sheet of paper. Others merely pressed the crystals upon a surface like filter-paper. Such screens are of little value, especially as the substance then fluoresces blue, which is nearly invisible, and only shows in spots.

By the following means the results are so excellent and the screen is so luminous that the shadows are clearer than in the X-ray photographs: The cyanide should be powdered to the finest dust possible. Then some of the clearest colorless varnish should be put upon a piece of tracing-cloth, because the same is so strong, and so transparent to the fluorescent light which is produced. The powder may now be mixed very thoroughly and intimately with the varnish, so as to make a homogeneous mass, in quantity sufficient to spread over the cloth to a thickness of about $\frac{1}{8}$ of an inch. This is mentioned because experimenters are likely to make the layer too thin. The reason for powdering the material is to produce a maximum amount of reflecting surface. The object of the varnish is to hold it together, and yet permit the reflected rays of flourescent light to become visible. The varnish should then be dried, but not necessarily perfectly dried. These directions should be followed very closely for good results. The end of the tube which is directed toward the Crookes tube, and which contains the screen, should be covered with photographer's black paper used for wrapping up sensitive plates. Either side of the screen may be directed toward the Crookes tube. A very important precaution is to perform the experiments in a rather dark room. It may be light enough to be able to see objects, but if the room is very light, the eyes are not used to darkness, and therefore the experiments are not satisfactory; but if the room is quite dark, the screen in the closed tube appears immediately, upon putting the eye to the hole in the tube, to be perfectly luminous. It will be more luminous under these precautions than luminous paint which has been held in the sunlight and brought into a dark room; and yet if performed where the eyes are exposed to the daylight the experiments are not so satisfactory. Another precaution is to have the electrical apparatus so arranged that the phosphorescent light from the Crookes tube is steady, which may be done, of course, by means of Leyden jars or other condensers.

My idea of this new use for X rays was conceived and attested on Feb. 1, 1896.

CLINICAL LECTURE.

CARCINOMA OF BREAST.—ACUTE APPENDICITIS.[1]

BY CHARLES McBURNEY, M.D.,
OF NEW YORK;
PROFESSOR OF CLINICAL SURGERY IN THE COLLEGE OF PHYSICIANS AND SURGEONS.

CASE I.

GENTLEMEN: The patient upon whom I propose to operate to-day has a carcinoma of the breast. The operation which I shall perform is one, a description of which was almost simultaneously published by Halsted, of Baltimore, and Willy Meyer, of this city. In this operation, not only the diseased, but also the surrounding tissue which is most likely to contain diseased elements, is removed. The operation provides against the thing which is the most discouraging in surgery—*i.e.*, the recurrence of malignant disease after operation. I say it provides against it, and by that I mean that it provides against it as well as this can be done by any known means. I have done about twenty operations of this kind. All of these patients made a good recovery from the operation. One of them has since died from extensive intrathoracic carcinoma. I shall explain the method of operation as I proceed with it. This redness of the skin is not due to the disease, but is the result of the preparatory soap application, the skin of some individuals being particularly susceptible to such irritants. You see that the whole left breast is involved in the malignant disease, but some of the skin appears to be entirely healthy. There appears to be no skin indurations. The axilla contains well-developed, enlarged glands, but these are quite loose. Careful examination above and immediately below the clavicle fails to show any enlarged glands there. The operation, that has been universally done for many years now, has been the free incision including the nipple, the dissecting back of the flaps widely, removal of the entire breast, and the extension of the incision into the axilla and the removal of its contents. This operation was a very great improvement upon those which had been previously done; nevertheless, when the disease has extended into the fascia or muscle, even such an operation must necessarily be very incomplete. In all cases there is a very strong tendency for carcinomatous disease of the breast to follow the lymphatics in certain definite directions. One of these is into the lymphatics of the axilla, and another, and perhaps still more important one, is through the lymphatics of the pectoral fascia. Hence the operation which I propose to do is founded on a most rational basis—the removal of those parts liable to have become infected in the way just described. So far the results of this operation have justified it. The operation is somewhat difficult, and occupies considerable time, but the patients bear it very well. In fat subjects it is somewhat more difficult of performance. In this case the skin around the nipple, while not exactly indurated, has a peculiar "pig-skin feel," and hence we shall be careful to remove it. In making the incisions in such cases we must not be hampered by considering how the wound is to be closed by skin-flaps. If after the thorough removal of all diseased tissue, the skin-flaps can be brought together, well and good; if not, then it cannot be helped; all of the disease must be removed regardless of the mode of closing the wound after the operation. Secondary skin-grafting is most satisfactorily resorted to, to cover any deficiency left at the time of operation.

I begin by including the breast and a considerable portion of the surrounding skin in a large elliptical incision; the two sides of the ellipse unite and extend up into the axilla, and then another incision is made from the clavicle until it meets the first wound. The flaps of skin are to be made as thin as, in the judgment of the surgeon, they may be and still survive. Of course, if they are made too thin, the vitality of the flaps will be destroyed, and they may necrose. The small flap made by the axillary and clavicular incisions is dissected back so as to expose the pectoralis-major muscle. Having now uncovered the entire field of operation superficially, we shall proceed to remove the breast and muscle *en masse*. I prefer to begin from the outside and dissect inward, including the axilla in the dissection. I am now dissecting down to the edge of the serratus-magnus muscle, after which I shall follow the edge of the latissimus-dorsi muscle. On reaching the axilla we must be very careful in our dissection. The best way, I think, is to find the vein first, and then dissect from this point as a landmark. Where it is possible to leave important nerves, such as the one going to the latissimus dorsi and the long thoracic, it is well to do so. I find that it can be done in the present instance, and, as you see, the amount of connective tissue remaining upon them is very minute. There are many venous branches from the axillary vein; we should carefully ligate these with a double ligature, and then divide them between the ligatures so as to save as much blood as possible. I think you can now appreciate the value of this new method of operating, for you can see several large glandular masses infiltrated with carcinoma which, according to the older method of operating, would have been partially concealed by the pectoralis-major muscle. Moreover, if this muscle were intact, the operator would be working in a small and steadily contracting space, so that it is easy to understand that the removal of all diseased tissue under such circumstances is well-nigh impossible. Now, I pass my finger under the pectoralis muscle, and divide it near to its point of insertion without any danger of wounding important vessels. This exposes the pectoralis-minor muscle, which is likewise divided with the finger underneath, protecting the subjacent parts. Having dissected away all diseased tissue from the vessels, and divided the last muscular attachments, we have only to sever the remaining connective tissue, and we can remove all in one piece. Not only have I removed the muscular tissue, but the fascia which lies over the muscles, for this fascia is extremely liable to be the seat of a recurrence of the disease. Those of you who have seen some of these patients will

[1] Delivered at the Roosevelt Hospital, New York, Feb. 15, 1896.

remember that there is no stiffness after the operation, although there is a slight diminution in muscular power—in other words, the anterior fibres of the deltoid enable the patient to carry on all the forward movements of the arm. The wound has been irrigated with normal salt-solution, and has now been rendered dry and clean. Some of these cases can be safely closed without drainage, but as it is impossible to say just when this can be done, I prefer to provide drainage in all cases. It serves to remove what serum and blood may accumulate, and if the tube be removed on the second day the healing process will not have been at all retarded by the use of drainage, while it has furnished an additional safeguard. I find that the flaps will come together, and close the whole wound without difficulty. Having adjusted the sutures and repeated the irrigation through the drainage tubes with the salt-solution, the final step is the application of the dressing. This should consist of a large number of "handkerchiefs" of gauze so applied as to make uniform pressure over the wound. Over this is placed a liberal supply of absorbent cotton, and the whole is firmly held in place by a binder and a number of broad roller bandages.

Let us now make a section of the breast that has been removed. You see here a characteristic carcinoma. It is not very hard, but it represents a rather rapidly growing type of tumor. Section of the axillary glands shows them to be very thoroughly infiltrated with carcinoma. Although, therefore, this operation is long and difficult, and trying to the patient, these objections must have but little weight when compared with the liability of the disease to recur when imperfect operations are done. Dr. W. S. Halsted has had fifty cases, operated upon in this manner, with no death.

CASE II.

This man presents an interesting history. He is 28 years of age, and has never had any abdominal disease before. Last Monday he was seized with some abdominal pain, but he did not go to bed, and there was no fever and no vomiting. He has been going about, though not at work, every day since then (now five days), and he walked into the hospital last evening. At that time he was leaning over to the right side, but he did not make much complaint. His pulse was only 80, and his temperature 98° F., and there was only slight tenderness in the ileo-cecal region. He certainly then did not have urgent constitutional symptoms. At 10 P.M. he vomited, and at midnight he had a chill, followed by a temperature of 101.4°. The pain increased in the iliac fossa. His temperature this morning was 101.4°, and a short time ago 101.6°. You see that the abdomen is not distended, although it is a little more rounded than normal. I find on examination excessive tenderness over the ileo-cecal region, and also a tumor, measuring about 3¼ inches in length. It is close to the outer part of Poupart's ligament, and extends a considerable distance in the direction of the umbilicus. This tumor was not present last evening. One may quite accurately estimate the pathological process that has been going on here. The patient must have had one of two conditions—he either had at the beginning a perforation of the appendix, with a small amount of suppuration, closely hemmed in by adhesions, thus accounting for the slight constitutional disturbance, or else there was originally a suppurating condition inside of the appendix without perforation. One of these conditions must have existed last night at the time of his admission. At the time he vomited last evening, either the pus already there burst through the adhesions, and invaded a fresh portion of the peritoneum, or else the appendix ruptured. Undoubtedly, we have here suppuration, indicated by the presence of this tumor, which has so rapidly formed, and by the signs which have preceded it. The tumor is often formed merely by excessive inflammatory œdema in cases of slowly developing tumor; but where it has formed as rapidly as in this case, you may be very certain that suppuration is present.

In such cases as this, it is well to make the incision pretty well to the outer part of the abdominal cavity. We can then irrigate and dress the part with the greatest ease. If we should approach it close by the side of the rectus muscle it would be much more difficult to treat. I have now divided the external oblique aponeurosis and muscle and the internal oblique and transversalis. I observe that the fascia transversalis is a little thickened by the adjacent inflammation. I cannot be positive, of course, whether suppuration has reached the abdominal wall at this point or not; one can rarely be positive on this point in any case. We shall therefore enter very carefully, for fear of injuring the intestine. I have opened into an abscess cavity, and now feel with my finger a concretion in it. This breaks down very readily, and we find that the nucleus is a pin. The abscess is very thoroughly shut off from the general peritoneal cavity.

I once saw a case of appendicitis occurring in a child of eight years. He was brought to me with a history of inguinal hernia, and he certainly had the signs of it. I operated upon him for inflamed hernia, supposing there was a mass of omentum in the sac which could be tied off. On reaching the sac a tumor about one inch long and three-quarters of an inch in diameter, containing two pins, was found. On dissecting further I found that the tumor was the appendix, which had come down into the inguinal canal. In another case I removed an appendix containing a concretion. When it was placed in water it dissolved, and I found in it four shot.

I have found enough in this case to account for all his symptoms. Shall I now extensively separate adhesions to see if there is anything more, or shall I simply leave this free opening with the confidence that if there is any more pus it will find its way into this opening? There are no indications that pus exists in any other part of the abdomen, and to break down the abscess wall would expose the patient to unnecessary risk, such as the opening up of a considerable extent of non-infected peritoneum and handling it. Without care, the operator may readily make a small break through the abscess wall in a case like the one before us, permitting a loop of fresh intestine to enter the abscess cavity, and this accident might give rise to a fatal peritonitis. The wound we have made here will be kept irrigated and lightly packed with gauze, and will fill up in a comparatively short time.

CLINICAL MEMORANDA.

REPORT OF A CASE OF GONORRHŒAL ARTHRITIS IN A NEW-BORN INFANT.

BY ESTHER M. TYRRELL, M.D.,
OF CANTON, O.

DURING the writer's term of service as resident physician in the Maternity Hospital, Philadelphia, the following case occurred:

M. B., colored, aged 21 years, was brought into the hospital in labor, second stage. As there was present then a purulent discharge from the urethra, all possible precautions were taken to prevent the seemingly unavoidable contagion.

The child, a well-developed female, was born, the eyes cleansed after the most approved methods and closely watched, preventive treatment being constantly employed.

The history gotten after delivery pointed to a well-defined case of gonorrhœa of the mother, though no microscopical examination of the discharge was made to verify the diagnosis.

Four days after birth a slight puffiness of one lid, with a scarcely perceptible redness, was noticed, and by evening, though the treatment had been quickened to hourly applications, the eyes were both in an alarming condition. The consulting ophthalmologist was called, and a most vigorous battle for the eyes begun. The lids were enormously swollen, and the slightest pressure would cause the pus to spurt several inches from them.

Four days after the appearance of the ophthalmia I noticed the wrists and dorsum of both hands were slightly swollen, the left being worse. I had them bathed in a hot saline solution, but it was ineffectual, the swelling continuing until it reached from the finger tips to the elbows. The skin of the wrists and forearms was shining and edematous. The child appeared to be uncomfortable, without indication of severe pain, except for a few minutes at a time.

Applications of a 10-per-cent. preparation of ichthyol with belladonna ointment were made and the hands and arms bandaged, the bowels thoroughly opened with calomel (gr. $\frac{3}{10}$, in three doses), followed by sweet oil. Five days later the swelling had disappeared; the eyes in the mean time had yielded to treatment. At the end of three weeks the patient was discharged in good condition, though the ophthalmologist continued treatment daily at the patient's home.

In the *Medical Science Monthly* for January, 1896, is added to the as yet short list of cases of arthritis associated with purulent ophthalmia, one by Hanshalter (*Congrès de Médecine interne de Bordeaux, Revue mens. des Mal. de l'Enfance*, October, 1895).

A CASE OF COMPOUND DEPRESSED FRACTURE OF THE SKULL.

By MARTIN M. KITTELL, M.D.,
OF KINDERHOOK, N. Y.

ON the morning of Nov. 4, 1895, I was summoned to dress a scalp wound. Taking the necessary instruments and dressings I found the man seated in a mill with a cloth bound tightly around the head. An investigation developed the following history: G. W., aged 52 years; strong and healthy, was grinding knives on a small emery-wheel, with a velocity of 3000 revolutions a minute. It broke, and one section of it struck him on the right side of the forehead. He was rendered insensible by the blow for at least 5 minutes, when he regained consciousness and was able to walk into the office, where I found him about 20 minutes after the accident.

He suffered very little pain, was perfectly clear in intellect, had not been and was not nauseated. In fact, there were no symptoms of serious injury.

On removing the cloth I found a gaping wound 2 inches long, about ½ inch wide, ¼ inch above the superciliary ridge, running slightly upward and backward. It was bleeding profusely. I sponged the part with a carbolic-acid solution, arrested hemorrhage by torsion, and found by probe and digital examination that the external plate had been driven into the diploë for 1 inch in length by ¼ of an inch in width. I carefully removed loose particles of bone and a few grains of emery; could find no exposed surface of the dura, nor could I detect pulsation. The depression seemed to be fully as deep as the thickness of an ordinary frontal bone. In the entire absence of symptoms I hastily decided to cleanse, pack lightly with iodoform gauze, and drain at most dependent part, closing all but that portion with catgut suture. After the usual dressing, he was taken home, and an ice-cap applied. I informed the family of the condition and the possible results, and mentioned to them the matter of trephining, but suggested that with the entire absence of grave symptoms I would prefer to wait until some symptom would suggest or warrant it, which was accepted. The ice-cap was worn for five days, and the wound healed by primary union. There was an entire absence of headache, irritability and fever. In twelve days the patient was at his office attending to business, and up to present writing is free of pain or mental disturbances.

I do not report this case to discourage the heroic plan of treatment in fractures of the cranium, but in the absence of symptoms it is believed that conservative methods should be recommended, rather than add the surgical shock of an operation to that already sustained.

GONORRHŒA OF THE RECTUM.[1]

By J. A. MURRAY, M.D.,
OF CLEARFIELD, PA.

ON the 25th day of March, 1895, the following unique case consulted me for treatment for what she supposed to to dysentery. She gave the following history:

Married. Age 28. Has two children. Always enjoyed good health. No uterine disease. No leucorrhea. Had always been a sufferer from constipation, for which she had, for the past six or seven years, used all the various aperients, laxatives, and cathartics. During the past two years, upon the advice of her physician, she had abandoned them all in favor of copious hot-water rectal injections, which gave her abundant relief.

[1] Read before the Clearfield County Medical Society, January 31, 1896.

For the past four or five days she had experienced great heat, pain, tension, and tenesmus of the anus and rectum, which were accompanied by a profuse discharge of blood and mucus. Complained of being very sore and irritated around the anus. There was some slight elevation of temperature, with some increase in the frequency of the pulse-rate. Urine was scanty and high colored. So nearly did the symptoms simulate those of dysentery that the treatment was directed to that disease. When the patient was seen the next day, all symptoms were increased in severity. Great pain, with constant desire to urinate and defecate. Frequent and copious injections of hot water, starch-water and laudanum were ordered in addition to rectal suppositories of opium, iodoform, and belladonna.

On the following day, which was about the seventh or eighth, counting from the time the symptoms became acute, the pain, tenesmus, and other local symptoms had not abated except when under the influence of opiates. Patient now complained of heat and pain in the vulva and vagina, with increased vesical tenesmus. Upon the development of those symptoms, it occurred to me the disease might be specific in character, and I promptly suggested a thorough examination, to which she readily consented.

The spincter ani was relaxed and there was some protrusion of the bowel. The mucous membrane of anus was highly inflamed and covered with a thick greenish mucopurulent discharge. With difficulty a small speculum was introduced, and the rectal mucous membrane was found to be intensely red and very sensitive. The labia were red and inflamed, and the nymphæ swollen, tender, and painful on pressure, although there was no vaginal discharge at this time. I suspected gonorrhœa, and to clear up the diagnosis I made some cover-glass preparations from the pus taken from the rectal and anal mucous membranes. Placing these slides under the microscope, the field was found to be loaded with gonococci, which confirmed the diagnosis of gonorrhœa. On the following day there was considerable discharge from vulva and vagina, and a microscopical examination of this pus showed it to contain the gonococci in great numbers. From this period there was superadded a typical vaginal gonorrhœa, which ran the usual course.

And now to show that this patient was not a pathic, nor her husband a pederast, I will explain the theory of the source of infection.

After confirming the diagnosis with the aid of the microscope, I explained to her the nature of the disease. Of course she was horrified, and could scarcely be made to believe such was the case, but I had fortified my diagnosis too strongly to admit a doubt. She asked me to call her husband and explain everything to him. This was done immediately, and as he had every confidence in his wife we all turned our attention to finding the cause of the disease. We suspected the servant-girl with being infected, hence her movements were carefully watched. The patient, as previously explained, was accustomed to take her daily rectal injection, which procedure was always carried out in the bathroom, where she kept her fountain syringe. It was soon discovered that the servant-girl made frequent visits to this bathroom, and each time used the same syringe. The girl was taken to task and confessed to having a well-marked attack of gonorrhœa; and naturally we concluded that the lady had infected her rectum by using this syringe shortly after being used by the girl.

When this case first came under observation all the various textbooks were consulted I could gain access to, but I found no literature on the subject, and the conclusion was reached that an important discovery had been made, which prompted the writing of this article. But, before concluding the subject, I examined an old volume of *The Annual of the Universal Medical Sciences*, and saw the subject briefly mentioned in these words, viz.: "Rollet reports one case. Gosselin one. Tardien had never seen one. Boniere has experimented and found it very difficult to inoculate the rectum with gonorrhœal pus; while Requin believes it almost sure to follow pederasty with a person suffering with the disease. Chas. B. Kelsey, the eminent rectal specialist of New York, has had occasion to suspect its presence but once." It will be perceived from the foregoing that gonorrhœa of the rectum is a very rare disease, and its existence even denied by one prominent authority. It is scarcely necessary to add in conclusion that the vaginal inflammation readily yielded to hot alkaline injections, followed by sterilized water and tamponing the vagina with cotton pledgets saturated with a solution of silver nitrate. The rectal inflammation was treated by saline purgations, copious injections of sodium-bicarbonate, and boric acid solutions, starch-water and laudanum, suppositories of opium, belladonna, sulpho-carbolate of zinc, hot poultices and fomentations. The disease of the rectum ran a protracted course and was followed by some patches of ulceration which were subsequently treated and cured by touching them with a solution of silver nitrate, followed by coating them over with stearate of zinc, and an occasional suppository of bismuth and iodoform.

THERAPEUTIC NOTES.

For Hyperidrosis of the Feet.—

℞ Liquor ferri chloridi . . f ℥ j
Glycerini . . . f ℥ ijss.
Olei bergamottæ . . f ℥ v.—M.
S. Apply topically with a brush.

—LEGOUX, *Dtsch. med. Woch.; Ctblt. f. d. ges. Ther.*, xiv, 2.

For Broncho-pneumonia in Children.—

℞ Sodii benzoatis . . gr. viii
Ammonii acetatis . . gr. xxiv
Spiritus Vini Cognac. . f ℥ ij
Misturæ acaciæ
Syrupi simplicis . aa f ℥ jss.
S. From one-half to one fluid dram every two hours.

—MARFAN, *Rev. Internat.; Ctblt. f. d. ges. Therapie*, xiv, 2.

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TO REGULATE THE PRACTICE OF MEDICINE IN THE DISTRICT OF COLUMBIA.

A BILL for this purpose has passed the lower House of Congress. The Chairman of the committee having it in charge states that it is the result of more than twenty years of attempted legislation in the District of Columbia. The laws of 47 States and Territories have been presented for the use of the committee, for comparison with this measure; and for the first time in many years the different medical societies have reached an agreement as to the necessity for the passage of the bill. There is only one State in the entire Union, which has not a law regulating the practice of medicine and surgery. That is the State of New Hampshire. The District of Columbia is the only other place in the country where the practice of medicine and surgery is not regulated. The effect of the laws in other States is to drive out irregular practitioners, and many locate and practice in the District who would not be tolerated in Virginia, Maryland, or elsewhere. This bill has been carefully considered, not only by the medical societies, and by gentlemen representing the different schools of the profession, but carefully, section by section and line by line, by the Congresional committee, and all are unanimous in the opinion that a measure of this kind is absolutely necessary, and that the bill has been framed in the most fair and comprehensive manner.

BEAUTY AS AN AIM IN MEDICINE.

Do we not often take a too baldly utilitarian view of our mission as physicians? We regard ourselves as chiefly concerned with the sternly practical aspects of life, with a large number of disagreeable and repulsive disease-processes; to rid the body of which, by means often as unattractive as themselves, is our sole aim and duty. "What have we to do with beauty, in any form?" we cry; "our concern is only with health." "And health means working-capacity, efficiency, freedom from pain and disability." Nothing could be more prosaic; nothing less poetic or artistic.

But *is* this all? Have we nothing of the artist-soul about us? no enthusiasm in our work? Is there nothing in the return of health which gladdens the eye as well as the soul, the heart as well as the mind? Have we no right to rejoice in the loveliness which Nature spreads before us daily in her human masterpieces, and deliberately aim at adding to its beauty and deepening its glow by every means in our power? Most surely we have. We are painters in living colors, sculptors in breathing marble; and we can conceive no higher and purer rapture of the creative mood than that which comes to even the humblest ministrant to the welfare of the little ones as he watches the glow of health come back to the cheek, the sparkle to the eye, and the lithe, elastic roundness to the shrunken limbs under his patient and resourceful care.

Beauty is both an important guide and a legitimate aim in our practice, for in nine cases out of ten it is the "trade-mark" of health. "The flower of life is red, is red," as the poet sings. And the coloring of the healthy skin, hair, or eye is warm and vivid; while the tints of disease of every sort—of gangrene, of ulceration, of suffocation, the hues of death and decomposition—are

dull, cold, and ghastly. Filth and famine, pestilence and decay, are alike either colorless or repulsive in hue; while color is an index of purity and wholesome vigor. And this relation is even more constant and necessary in beauty of form. The chief element in beauty of outline is symmetry; and symmetry simply means balance, equipoise, efficiency, and is generally allied with either speed or strength. The second important element is the curve, and the curve essentially denotes elasticity, movement, vigor. A thoroughbred horse can almost invariably be picked out of a mob of ordinary horses, simply by the long and graceful curves of his neck, loin, and quarters and the general beauty and symmetry of his figure. Beauty of form is usually associated with great speed, strength, or intelligence, generally with all three. Among the lower animals this will be readily admitted, but that the same rule holds true of our own species, even in these over-civilized days, will be with equal promptness doubted, if not denied. And yet we venture to assert that a careful study of the elements which make for beauty in the human body as a whole and in its various parts will amply prove this position.

Take the highest form of beauty of which our bodies are capable, the grace of carriage, of bearing, the poetry of motion, and it essentially consists of and depends upon the rippling, springy vigor of muscle combined with the broad, deep chest of good lung-power, the thin flanks of endurance, the wide hips and well-rounded thighs of weight-carrying form, and the straight back held in place by the powerful bow-string of loin-muscles. The woman who possesses the most exquisite charm of a graceful bearing, the man who "carries himself well," will be found possessed of distinctly greater strength, speed, or endurance than his less attractive sisters and brothers of equal weight, age, and training.

As every rational method of pursuing beauty leads to health, ought we not frankly to recognize it as a perfectly legitimate and worthy aim in life in general and in medicine in particular; treat the desire for it as an ally, instead of an enemy? Think of the tortures which women in all ages have suffered for their idea of beauty, and then consider what a tremendous lever in managing our most troublesome cases the recognition places in our grasp! Let us encourage our patients, both male and female, to strive for beauty as well as for health, and they will attain more of both, as Heaven knows they and we need to in this latter end of the nineteenth century.

RECENT PROGRESS IN MEDICINE.

THE TREATMENT OF PERNICIOUS ANEMIA.

WHETHER pernicious anemia is a special disease or one secondary to a number of exhausting conditions cannot be stated with positiveness. Advocates of the one contention may urge their claims quite as logically as those of the other. Although we have been quite familiar with the histological condition of the blood, as well as with the pathological changes which go on in the hematopoietic organs, in this disease, yet no great advance had been made in the treatment of it until the publication of Professor Frazer's paper on the efficacy of bone-marrow, now nearly two years ago. In textbooks, the disease is usually stated to be a fatal one, and little hope from treatment is encouraged. The special remedial agents which are spoken of are arsenic, phosphorus and transfusion. It is also not uncommon to find it specifically stated that iron is of no value in this disease; the fact is demonstrated that it often does harm.

The drug which has been given with most confidence in the treatment of pernicious anemia, since it was first recommended by Isnord in 1865, and particularly since its claims were urged by Bramwell, several years later, is arsenic. The *rationale* of its use has never been satisfactorily explained from a physiological standpoint. Its efficaciousness in some cases is attested by trustworthy clinicians. It undoubtedly causes an increase in the number of red blood-corpuscles,—in all likelihood by stimulating the activity of the bone-marrow. But how it causes the increase in the constituents of the red blood-corpuscles—that is, in what manner the amount of hemoglobin is added to, unless it be from the food-stuffs—it is impossible to say. As a matter of fact, arsenic often provokes a temporary improvement in the patient which is coincident with this increased output of red blood-corpuscles, but which, if not followed by the administration of iron or sub-

stances rich in iron, is quickly followed by relapse that is generally fatal. There is probably no valid reason why iron in absorbable and non-irritating form should not be of corresponding value in this disease as in other forms of anemia, providing the ability to take it into the system, and dispose of it after it is so taken, exists.

Necessarily the extreme impoverishment of the blood in pernicious anemia prevents a proper secretion of the digestive juices, and rapid hemolysis results in products which stimulate thermogenesis, the result being frequently a considerable degree of fever. These two factors alone are inimical to the absorption and disposal of iron. If, however, iron can be introduced into the blood in very small quantities and in a form that does not irritate the digestive passages, there are very good reasons to believe that it is of no less service here than in other forms of anemia. It seems necessary to emphasize the statement that it does not deserve the stigma of inutility which textbooks and tradition have given to it. It is because most of the cases of this disease succumb, no matter what treatment is used, that the conviction is so widespread.

The results of transfusion, though good results have followed careful use of this form of therapy by many trustworthy observers, have never appeared very brilliant nor convincing in the published reports. Here also the *rationale* of the procedure has never been clear. One advocate will remind us that it supplies the corpuscular element, while another that it contributes necessary serum, while a third may emphasize the fact that it carries into the blood a desirable amount of hemoglobin. To each of these there may be brought very serious objections. In the first place it is the unanimous opinion of physiologists that foreign corpuscles, when introduced, it matters not how carefully, soon die and add nothing to the blood but detritus. If its benefit depends upon the serum, which is almost incredible, there is always some risk of sepsis and other complications which go far to invalidate the small amount of efficacy which this measure contributes to the treatment of the disease.

The use of phosphorus has been almost entirely given up, and very properly so.

When Frazer reported a case of pernicious anemia in which the administration of bone-marrow was causative of such good results that complete cure rapidly followed—a case in which the usual modes of treatment had been most assiduously tried, with failure—it was hoped that this disease had at last yielded to therapy. And although experience during the last two years has not served to substantiate entirely this laudable hope, one does not feel in the presence of a patient suffering from this disease to-day such complete helplessness as he did before the agent was discovered. So many clinicians, like Danforth, Drummond, Barrs, Bigger, Pepper, and Stengel, have seen such startlingly beneficial results in cases which have been apparently quite hopeless, that we can no longer withstand the feeling that this form of therapy is the most potent in the treatment of pernicious anemia. The *rationale* of its use is quite as obscure as that of those which we have previously mentioned. It is the marrow of ox and calf bones that has been used most frequently in those cases where cure has followed. In the chemical examinations that had been made of the marrow and reported, it has been found that in several cases the yellow marrow was quite as beneficial as the red bone-marrow. It is well known that the former is not like the latter a hemopoietic tissue, and the amount of iron which it contains is really almost infinitesimal—as estimated by Stockman, $\frac{1}{80}$ of a grain or less to an ounce of the marrow—while red marrow contains something more than twice that quantity, still a very small amount. Nevertheless if the clinical tests show encouraging results, as they have done frequently in the treatment of these cases, we should have the willingness to continue the treatment until physiological explanation shall follow. That this will be the outcome after a sufficient number of cases have been treated, there can scarcely be any doubt. The conflicting reports that have been made as to the efficacy of bone-marrow may be due, as has been suggested by Pepper and Stengel, to the preparation of the substance which has been used.

In the beginning the raw, unprepared marrow of ox bone was generally the form in which it was administered. Latterly a number of preparations, glycerin extract and other combinations, to palliate the patient's palate and esthesia have

been tried, and it is particularly with these combinations that failure has been reported. It would seem justifiable, after what has been done with the simple bone-marrow, to urge the necessity of making further experiments with this substance, not only in pernicious anemia, but in other forms of anemia, such as chlorosis. Indeed in the latter disease excellent results have been reported by Billings, while at the same time he mentions two cases of pernicious anemia in which bone-marrow entirely failed. Mann has likewise seen good results follow the use of bone-marrow in hemophilia, and in symptomatic anemia, and the writer has in more than one case seen surprisingly beneficial results follow its use in the latter condition. In the profound anemia attending such conditions as anchilostomiasis, in which the parasites produce a substance which causes rapid destruction of the blood and albuminous tissue, it would seem that bone-marrow should be of signal service in promoting hemogenesis—for we do not believe that it has any influence to check hemolysis—while active measures are being taken to eject the parasites from their unnatural habitation. In fact, in a case of this disease recently under observation, it would seem that bone-marrow has contributed very materially in just this way.

If pernicious anemia is a specific form of gastro-intestinal disease, a view which has for its most recent and ardent advocate Hunter (*British Medical Journal*, Feb. 8, 1896), and entirely different to anemia due to the loss of blood and exhausting conditions, for instance, no valid objection can be advanced to the use of bone-marrow in the same way as in the last-mentioned case.

The experiments of Hunter show that there are characteristic changes in the liver, spleen, and kidneys, particularly in the peripheral areas of the liver lobules, which are not produced by the absorption of extravasated blood, but are in direct relationship with the gastro-intestinal tract, wherein the hemolysis begins which is responsible for the pigment. These experiments have been done in such a scientific manner, and the conclusions have been stated in such a logical way, that they carry conviction. They do not, however, suggest a way in which treatment may be more efficacious; for though they may prompt the suggestion that the gastro-intestinal disease is due to some organism, we know practically that treatment of pernicious anemia directed to that end is useless, or nearly so.

JOSEPH COLLINS, M.D.

ECHOES AND NEWS.

LONG BRANCH, N. J., is to have a public hospital for contagious diseases.

A BILL has just received the signature of Gov. Morton, of New York State, appropriating $6000 for equipping the quarantine boat *Ripple* used in New York harbor, with disinfecting apparatus. It is hoped that this will somewhat improve the very primitive methods formerly used.

MRS. WILLIAM ALLEN, of Pilot View, Ky., celebrated her eightieth birthday the other day by completing the cutting of her third full set of teeth.

A RESIDENT of Springfield, Mass., who made the pilgrimage to Denver and was "cured" of a chronic disease by the healer Schlatter, died in a hospital last week as the result of an operation which was made necessary through neglect of ordinary treatment during the time his faith lasted.

DR. EDWARD EVERITT, of Newark, N. J., died at his home, of malignant diphtheria, supposed to have been contracted in attending two children afflicted with that disease.

THE insignia for the Medical Corps of the United States Army have been finally decided upon. It is a modified cross of the Knights Hospitaller—a Greek cross. This is to be seven-eighths of an inch high and the same in width, and to be of dead gold bullion or metal.

DR. T. T. THOMAS, resident physician at Charity Hospital, Norristown, Pa., has been elected to a similar position at the University Hospital, Philadelphia.

SIR JAMES CRICHTON BROWN, the eminent English surgeon, has given the name "anorexia scholastica" to a certain brain trouble which afflicts those young women who "read Lucretius for recreation and cannot boil a potato." Although in itself not a dangerous disease, the sequences may prove serious.

DR. FLOTO, of San Francisco, who is 94 years old, is still in the active practice of his profession. He believes that he is the oldest practicing physician in the country.

A LONDON investigator, Mr. J. G. Vine, announces that he has been able to photograph, at one end of a wire, objects exposed between two vacuum tubes at the other end of the wire, and declares that he will soon be able to photograph objects at any distance by means of X or magnetic rays conveyed by wire.

DR. A. L. METZ has been elected to succeed temporarily the late Prof. Joseph Jones as professor of chemistry and medical jurisprudence in Tulane University, New Orleans, La.

MR. G. D. PRATT, of Brooklyn, N. Y., has given to the trustees of Amherst College a sum of money sufficient for the building of an infirmary for the use of sick undergraduate students. The work of excavation will begin in the early spring.

A HOT spring is reported to have broken forth near No. 326 East Houston street, New York city, which has already acquired great fame among the denizens of the East Side, on account of its curative properties. Surely it could not have selected a more convenient locality at which to deliver its stream "for the healing of the nations," for they are all represented in that vicinity.

THE BALTIMORE MEDICAL ASSOCIATION held its regular annual meeting on the evening of February 24th, and elected the following officers for the ensuing year: Dr. Randolph Winslow, president; Dr. Herbert Harlan and Dr. Joseph T. Smith, vice-presidents; Dr. W. E. Wiegand, corresponding secretary; Dr. Eugene Crutchfield, recording secretary; Dr. C. Urban Smith, treasurer; Drs. H. H. Beidler, E. G. Waters, and John Neff, Executive Committee; Drs. Wilbur Brinton, S. T. Earle and John W. Chambers, Committee of Honor.

ONE HUNDRED AND FIFTY cases and fifty deaths from yellow fever are reported to have occurred on board the Italian cruiser *Lombardia*, which is now in the harbor at Rio Janeiro, Brazil. Alertness will be required by the quarantine of the Atlantic and Gulf ports to prevent the entrance here of this dread scourge.

ALL the police force of Lansing, Mich., were in quarantine several days last week, and the police station and town jail were closed during the same period, while the policemen were vaccinated. A tramp with smallpox came to the police station and was passed on to the jail. Practically every member of the force came into contact with the man, and so the force was put in quarantine, and the jail and station-house were closed and disinfected.

IT is reported from Elgin, Ill., that the dairymen of that section are considerably alarmed at the statement of Dr. Trumbower, State Veterinarian, that in his opinion 50 per cent. of the dairy cattle thereabout are afflicted with tuberculosis. Of thirty-three cattle belonging to the State Insane-asylum which were submitted to the tuberculin test, fifteen were condemned, and all of them were fat, sleek, and apparently healthy. Five of those pronounced diseased were slaughtered, and tuberculosis was found to exist in a pronounced degree in all. Abscesses as large as a man's hand were found in the lungs, and the lymphatic glands and the lungs were thoroughly permeated with tuberculosis.

STEEL-COATED rifle bullets for the new magazine guns cause very little pain, says Dr. Delorme, surgeon-in-chief of the French Army. During the riots at Fourmies, France, one man was wounded so badly as to be paralyzed, but did not suspect that he had been shot until he saw blood-stains on his clothing; one, shot through the leg, only felt a slight shiver; another, shot through the arm, felt his elbow twitch and closed his fist mechanically. At short range, 100 to 150 yards, the bullets are apt to explode and do serious mischief.

AT the regular monthly meeting of the New York State Board of Health, held at the Hotel Métropole, New York city, February 28th, Dr. F. O. Donohue, the chairman of the Committee on Tuberculosis, presented an exhaustive report on the work accomplished in the way of destroying diseased animals since July 15, 1895. The report states that 527 bovines suffering from tuberculosis were destroyed since the date named; that $12,282.25 have been paid out in awards to the owners of the cattle. The greatest slaughtering of diseased cattle was done in Dutchess county, but many animals were also destroyed in Westchester and Putnam counties. The appropriation last year for the work of the committee was $30,000, but Dr. Donohue says this sum is not enough. The secretary's report stated that there were 900 fewer human deaths in January, 1896, than in January, 1895, and fewer than in the four years preceding. "There was an increase," the report says, "in the mortality from typhoid fever, scarlet fever and measles, and diarrheal disease. There were nearly 600 fewer deaths from acute respiratory diseases and 100 fewer from consumption and nervous diseases." Dr. S. Case Jones submitted a report on the typhoid-fever epidemic in Elmira. There were, between January 3 and 27, 87 cases of typhoid fever reported in Elmira. Seventy-seven cases were in families using the city water for domestic purposes, and the remaining 10 cases were among children who used the city water in the schools. Dr. Jones said that the State Board of Health should enforce the law to prevent the pollution of rivers by sewers, and that the authorities of Elmira should insist that the drinking-water from the Chemung River should be filtered before distribution.

EXPERIMENTS made with electricity on the toxins of disease by MM. d'Arsonval and Charrin, of Paris, France, show that the effect is to attenuate the toxin, converting it into a useful antidote. The toxin of the diphtheritic and the pyocyanic bacilli was subjected to the physical action of currents of high frequency. The current had no direct influence on the vitality of the microbes themselves, but modified the liquid in which they live so as to render it noxious to them. The action of the current, it is asserted, is not chemical, but purely physical. In twenty minutes a virulent poison can be turned into vaccinating matter. Electricity is to be tried on animals infected with the toxins, to see whether the effect is the same on living tissue.

EXPERIMENTS on the spreading of disease by burial, made by Dr. Löseuer, of Paris, France, tend to prove that there is little danger of infection from the practice. Carcasses of animals infected with different diseases were

buried as nearly as possible as human bodies would have been. Bacilli of cholera could no longer be found in the remains after 28 days, those of typhoid fever disappeared after 96 days, those of tuberculosis after 123 days, those of tetanus were very virulent after 234 days, but disappeared after 361 days, while the anthrax bacilli continued in full force to the end of the year of investigation. In none of these diseases, save that of anthrax, did the germs find their way to the surrounding soil and water.

THE work of the Section on Neurology and Medical Jurisprudence at the coming meeting of the American Medical Association at Atlanta promises to be of unusual interest. The desire has been quite generally expressed to have discussions upon the following topics: The Etiology of Insanity; Expert Medical Testimony in Disputed Mental Cases; Medical Aspects of Crime. An urgent invitation is extended to present papers and records of cases that have a bearing upon these topics, or upon any other neurological or medico-legal subject. Those who expect to contribute papers or reports to this section will greatly facilitate the business of the section by writing at once to the chairman, T. D. Crothers, M.D., Hartford, Conn., or to the secretary, W. J. Herdman, M.D., Ann Arbor, Mich.

THE Section on Surgery at the next meeting of the American Medical Association at Atlanta, Ga., will devote special attention to "Surgery of the Cerebro-Spinal Axis and its Bony Encasements." It is urgently requested that all members who have papers or other material bearing, not only upon this, but any subject coming properly within the province of this section, will correspond with Dr. W. L. Estes, secretary, South Bethlehem, Pa., at an early date, giving title and other particulars concerning their proposed contributions.

SOCIETY PROCEEDINGS.

REPORT OF THE LOUISVILLE CLINICAL SOCIETY.

Dr. W. H. Wathen presented reports of the following cases:

PYOSALPINX WITH OVARIAN ABSCESS.

CASE 1.—Two years ago a single woman, aged 22 years, consulted me for severe pain in the region of the ovaries and tubes. Examination revealed a fixed uterus with a tumor upon each side connected with the ovaries or tubes. She had been suffering for a considerable time, and gave the history of having been infected with gonorrhœa. Diagnosis of pus-tubes was made and operation recommended.

She passed from my observation and I saw nothing more of her for two years. Recently she was again referred to me by another physician. She reported that after being treated by me she improved very much and thought she was well, occasionally suffering, but had been for the past few weeks suffering very severely in the pelvis, had a constant elevation of temperature of from one to three degrees, with acceleration of pulse. In an examination I found more immobility of the uterus and more extensive involvement of both sides.

She was operated upon, and the tubes found in Douglas' pouch firmly adherent. They were brought up and the tubes and ovaries removed. There is one interesting point to which I wish to call attention. When the adhesions upon the left side, where the largest tumor was situated, were separated, something that appeared to be pus came up into the wound and was wiped away. When the tube and ovary were removed it was found that this was pus and that it came from the ovary, which was full of *foci* of pus, giving it the appearance of a sponge filled with pus. Upon a careful examination of the specimen, it was found that the ovary had become infected, not from the end of the tube, as is usual, but from about the junction of the inner with the middle third, where a very small opening connected the tube with this sponge-like ovary. As the abdominal cavity was not irrigated, I was a little fearful some pus from the ovary might have remained, though I sponged everything away very carefully; but the woman made an uninterrupted recovery.

PYOSALPINX ON LEFT SIDE, WITH TUBE AND OVARY ON RIGHT SIDE HEALTHY.

CASE 2.—Patient aged 25 years recently consulted me and was operated upon a few days later. She had been suffering a great deal for the last few weeks, or months possibly, with pain in the region of the ovaries, uterus, and tubes. On one side a very considerable enlargement was found; on the other side the enlargement was not so great. The abdomen was opened and the tubes found to be firmly adherent. One side was badly diseased with a pus-tube, which was removed; on the other side, although the adhesions were equally as extensive, the tube was found to contain no pus, and the ovary normal, so they were not removed, and the woman may bear children.

ANTERIOR VENTRAL FIXATION AFTER REMOVAL OF A SUBPERITONEAL PEDUNCULATED MYOMA.

CASE 3.—Operated upon to-day, neither ovaries nor tubes were removed. The patient was referred to me a few days ago, diagnosis of pyosalpinx having been made. The uterus was fixed in a retroverted position and the ovaries and tubes were adherent in Douglas' pouch. It was impossible to say whether the tubes contained pus or not, but it was easy to see that the woman was suffering with peritionitis and that an operation ought to be performed. When the abdomen was opened the adhesions were found extensive, binding the uterus, ovaries, and tubes, but were not difficult of separation, and the tubes and ovaries were found to be nearly healthy. A small fibroid tumor about one inch in diameter was removed from the fundus of the uterus. The uterus was sutured to the anterior abdominal wall by two silk sutures introduced through the peritoneum on each side and through the sides of the uterus near the fundus, and tied between the peritoneum and the muscle, so that they were buried when the abdomen was closed. Another suture was introduced through the fundus of the uterus and brought out through the abdominal walls and tied over the abdominal wound just as any other suture that closes the abdominal incision.

This woman, I think, will be entirely relieved and be able to bear children.

DISCUSSION.

DR. W. C. DUGAN: What do you think was the cause of the pelvic peritonitis?

DR. WATHEN: I think it was the result of an abortion, because from the history she gave me I infer that she had an abortion some months ago; the septic matter did not pass, I am sure, through the tubes, but must have gone through the lymphatics to the peritoneal structures.

DR. DUGAN: I do not fear pus-tubes as I formerly did, nor as I do pus from an appendicular abscess. I think the pus is often innocuous, and when left in the cavity will not cause any trouble. I am not surprised at all that Dr. Wathen had no peritonitis following the operation where pus escaped into the cavity, for it is well known that if pus, at first of a very virulent form, has been retained for a long time, the pus-forming organisms will die and the pus become innocuous. This undoubtedly explains why we do not have peritonitis following the escape of pus into the peritoneal cavity, and I think the Germans are right in not subjecting these patients to irrigation, that used to be so common with operators in this country. The time was when this patient would have been flooded with gallons of water; and where we subject these patients to so much irrigation there is very apt to be more or less septic matter introduced in the same way, and the patients do not do as well as when treated as Dr. Wathen has described. The pus contained in pus-tubes is not, as a rule, virulent; and careful sponging in such cases is better than irrigation.

DR. T. P. SATTERWHITE: What are the statistics with regard to stitching the uterus to the abdominal walls for the cure of retroversion? Furthermore, if it is successful, would this not also relieve procidentia?

DR. WATHEN: The operation for ventral fixation of the uterus, if performed correctly, should be almost without exception primarily successful. There is no reason why it should not be, and it is practically devoid of danger. Further, the uterus will remain, in nearly every instance, permanently fixed. Dr. Howard Kelly, of Baltimore, who has probably done more of this work than any other operator, shows that many women have become pregnant after ventral fixation, have carried the children to term, and have been relieved afterward, the uterus ascending properly, and, when involution had been completed, remaining in its anterior position.

Ventral fixation is an excellent means of curing patients having procidentia, if the uterus is not too large. In these cases it is best to amputate the neck of the womb as high as we can; and if the vagina is much dilated, with a cystocele or a rectocele, or both, anterior ventral fixation should be preceded by an operation upon the vaginal wall that will narrow it and bring it nearly to the normal size.

In doing an operation for anterior ventral fixation I always scarify the uterus and the peritoneum that comes in contact with the uterus, to insure more perfect adhesion. I think scarification is advisable in all cases, though cases have been reported where union was firm without it. I have failed to secure adhesion in one case, which I attributed to the fact that I did not properly scarify the surfaces.

DR. LOUIS FRANK: Take, for instance, the patient operated upon to-day. If this woman subsequently becomes pregnant, what will become of the suture, and what effect will the suture have upon the course of the pregnancy?

DR. WATHEN: There should be no effect upon pregnancy; what becomes of the suture I do not know—it may be absorbed, or it may remain intact. When the uterus ascends it must carry the adherent peritoneum along with it to a certain extent, and, this being true, the fact that the suture is buried in the peritoneum and the uterus, it would not be disturbed in its relation to these two structures. Experience, however, has shown that these buried silk sutures do no harm. I would prefer to have a buried silk suture to a buried silkworm-gut suture in the event the woman became pregnant.

DR. FRANK: I want to say a few words as to ventral fixation for the cure of retroversion, with the occurrence of subsequent pregnancy and after results in these cases. I have read with a great deal of interest, especially since the last discussion upon ventral fixation before this society, all the literature upon the subject. Dr. Howard Kelly's statistics I have not seen. So far I have been able to find the report of but one case, I think by Edebohls, where pregnancy has occurred after the operation of ventral fixation, the uterus subsequently returning to its natural position.

The after result in these cases, I think, is of the greatest importance. It strikes me that these adhesions between the visceral and parietal peritoneum must become stretched as a result of pregnancy; then with the occurrence of subinvolution at any future time the uterus would necessarily go back to its retroverted position. The trouble is that the original cause of the displacement is still present. What results Dr. Kelly has obtained in this connection I do not know. Edebohls' case, which was exhibited, did not show any relapse. This case was certainly cured.

There is no question but ventral fixation, as well as a properly adjusted pessary, will mechanically cure retroversion by fixing the uterus in a position where it cannot again fall back. In both, however, the cause of the retroversion is not removed, so that if there is any stretching, which sooner or later in pregnancy, it seems to me, must occur to some extent, then during involution the uterus would fall back. They are not cures, in the proper sense.

As to the buried suture: I can hardly agree with Dr. Wathen that these sutures when put in this way will remain in place. It strikes me that they must pull out. The parietal peritoneum does not during pregnancy ascend along the anterior abdominal wall as the uterus ascends; and when the uterus rises, as it does, above the umbilicus, the sutures must pull out, or the adhesions be torn. This, it impresses me, must be the ultimate result, unless the sutures pass from the lower portion of the body of the uterus instead of from the fundus or sides of the organ.

As to ventral fixation for the cure of prolapsus of the uterus, I agree that if there is a prolapse of the vagina, this must be cured first. There is frequently a laceration of the perineum resulting in a retrocele, and also a cysto-

cele with this prolapsus uteri, which must be cured, and the lacerated surfaces also remedied. The condition in such a case is very much like any other hernia, it being in fact a pelvic hernia, and would necessarily be the most difficult of all to cure by ventral fixation. I think intra-abdominal pressure, the cause primarily of the operation, must necessarily sooner or later, if we rely exclusively upon ventral fixation, force the uterus down where it was before.

The operation recommended by Freünd holds the uterus in position very well; I do not believe, however, that it is a desirable operative procedure. It certainly cannot be successfully done in women who expect to bear children. I would like for Dr. Wathen to bring out these points a little more fully.

DR. WATHEN: In prolapsus uteri we almost invariably find, as Dr. Frank has suggested, either a partial rupture of the perineum, or a perineum that has lost its resisting power because of pressure; and in addition to this a prolapse of the anterior or posterior vaginal wall, or of both. The vaginal tissues are generally thickened, so that this additional weight helps to maintain the procidentia. The uterus in nearly every case is much enlarged and elongated; only recently I measured a uterus that was freely prolapsed, and found it six inches in length. In a case of this kind if we simply perform ventral fixation, with no support from below, we will find that the adhesion will gradually give away and the uterus with the vaginal wall will again become prolapsed. But if we operate upon the perineum and vaginal wall, and neck of the uterus if indicated, then perform at the same sitting, or on a subsequent occasion, ventral fixation, we will cure nearly all of these patients. I have cured a great many cases of complete prolapsus by amputating the neck of the womb, and by removing a portion of the vaginal wall (either anterior or posterior), or by removing both posteriorly and anteriorly a portion of the vaginal wall. I operated upon a woman by this method several years ago, two months after birth of a child, removing a section of the vaginal wall posteriorly and anteriorly. The patient had a protrusion as large as two fists. She has had no recurrence of the trouble. So I say that many cases of complete prolapsus may be cured by perineal and vaginal operations, supplemented by amputation of the neck of the womb.

DR. DUGAN: The question raised by Dr. Frank does not seem to have been answered by Dr. Wathen—*i.e.*, Does the uterus go back to its retroverted position after pregnancy? It has been known that, in a woman having a retroverted uterus, becoming pregnant and being delivered at term, the uterus permanently returned to its normal position. This is easily understood.

DR. SATTERWHITE: I may have misunderstood Dr. Wathen's description of a lacerated or deficient perineum as being one of the causes of procidentia. If this be true, then I would like to know how to account for many cases of prolapse where the perineum is intact. If the perineum is intact then it certainly should withstand the pressure from above and prevent the uterus coming out. I do not see that the perineum has one iota to do with preventing or causing prolapse of the uterus; it is the ligaments of the uterus and reflexion of the peritoneum that hold the uterus in its normal position; and if the ligaments are capable of being stretched to allow the uterus to ascend as it does during pregnancy, I do not see why it may not also descend sufficiently to allow complete procidentia regardless of the resisting power of the perineum. I remember this subject came up many years ago in a meeting of this society, and, from my anatomical knowledge of the subject, I took the same ground then—that the perineum had little to do with supporting the uterus. Dr. Gill Wylie in a published article takes the same view.

DR. WATHEN: In cases where the uterus, vagina, and all the generative organs are in a healthy condition, I would say the perineum has nothing *directly* to do with supporting the uterus. But where there is a rupture of the perineum, associated with rupture of the superficial, middle, and deep layers of fascia, the support that holds the anterior vaginal wall intact is destroyed, and the rectum falls forward, resulting very soon in a rectocele that forces down the posterior vaginal wall, causing it to dilate more and more and become thickened and lose its tonicity; so that instead of the vagina furnishing support to the uterus, as it certainly does in a healthy condition, it does by its weight tend to pull down the uterus, gradually retroverting it and finally causing prolapse. When the perineum and fascia are destroyed, the vagina is put in such a condition that it does not return to its normal dimensions, and gives no support to the uterus; in fact it tends to draw the uterus down; but with the perineum intact, and the vagina in a healthy condition, being held posteriorly against the rectum, anteriorly against the bladder, and latterly attached to the pelvic structures, it does not aid materially in holding the uterus in its normal position, which is conducive to complete involution of the uterus and broad ligaments.

For these reasons it is necessary, in all cases where the perineum has been torn, to repair it in cases of procidentia; but the restoration of the perineum will do practically no good unless we restore abnormal to normal conditions.

OBITUARY.

DR. NELSON FANNING, Sr., who died at his home in Catskill, N. Y., Thursday, February 27th, was one of the oldest physicians in the United States. He was in active practice until within a few days of his 88th birthday, and had been continuously a medical practitioner for 66 years. In the war of rebellion he served nearly two years as surgeon of the 134th New York Volunteers.

DR. SMITH ELY, for many years a leading physician and surgeon in Newburg, N. Y., died February 28th, of heart disease. He was 68 years old. He studied medicine in New York, London, and Paris, and was graduated from the Vermont Medical College.

DR. LAUGHTON MCFARLANE, professor of surgery at the Toronto University, died February 29th, of blood-poisoning, contracted while amputating the toes of a patient at the General Hospital a week previous. He was 54 years of age.